



HMI EXT

USER MANUAL

October 12, 2007

Doc #E134727 V.1.03



Electro Industries/GaugeTech

1800 Shames Drive

Westbury, New York 11590

Tel: 516-334-0870

Fax: 516-338-4741

sales@electroind.com

www.electroind.com

“The Leader in Web Accessed Power Monitoring and Control”

HMI EXT User Manual
Version 1.03

Published by:
Electro Industries/GaugeTech
1800 Shames Drive
Westbury, NY 11590

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or information storage or retrieval systems or any future forms of duplication, for any purpose other than the purchaser's use, without the expressed written permission of Electro Industries/GaugeTech.

© 2007
Electro Industries/GaugeTech

Printed in the United States of
America.

Shark® is a registered mark of Electro
Industries/Gauge Tech.

Customer Service and Support

Customer support is available 9:00 am to 4:30 pm, Eastern Standard Time, Monday through Friday. Please have the model, serial number and a detailed problem description available. If the problem concerns a particular reading, please have all meter readings available. When returning any merchandise to EIG, **a return materials authorization number is required**. For customer or technical assistance, phone 516-334-0870 or fax 516-338-4741.

Limited Warranty

Electro Industries/GaugeTech warrants that (a) the Software will perform substantially in accordance with the accompanying written materials for a period of ninety (90) days from the date of receipt and (b) any Electro Industries/GaugeTech hardware accompanying the Software will be free from defects in materials and workmanship under normal use and service for a period of 4 years from the date of shipment. During the warranty period, we will, at our option, either repair or replace any product that proves to be defective. To exercise this warranty, fax or call our customer-support department at the number above.

Customer Remedies

Electro Industries/GaugeTech and its suppliers' entire liability and your exclusive remedy shall be, at Electro Industries' option, either (a) return of the price paid, or (b) repair or replacement of the Software or hardware that does not meet this Limited Warranty and which is returned to Electro Industries with a copy of your receipt. This Limited Warranty is void if failure of the Software or hardware has resulted from accident, abuse, or misapplication. Any replacement of Software or hardware will be warranted for the remainder of the original warranty period or thirty (30) days, whichever is longer.

No Other Warranties

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, ELECTRO INDUSTRIES/GAUGETECH AND ITS SUPPLIERS DISCLAIM ALL OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH REGARD TO THE SOFTWARE, THE ACCOMPANYING WRITTEN MATERIALS, AND ANY ACCOMPANYING HARDWARE. THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY HAVE OTHERS WHICH VARY FROM STATE/JURISDICTION TO STATE/JURISDICTION.

No Liability for Consequential Damages

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO EVENT SHALL ELECTRO INDUSTRIES/GAUGETECH OR ITS SUPPLIERS BE LIABLE FOR ANY DAMAGES WHATSOEVER (INCLUDING WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR INDIRECT DAMAGES FOR PERSONAL INJURY, LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION, LOSS OF BUSINESS INFORMATION, OR ANY OTHER PECUNIARY LOSS) ARISING OUT OF THE USE OR INABILITY TO

USE THIS PRODUCT, EVEN IF ELECTRO INDUSTRIES/GAUGE TECH HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN ANY CASE, ELECTRO INDUSTRIES/GAUGETECH AND ITS SUPPLIERS' ENTIRE LIABILITY UNDER ANY PROVISION OF THIS AGREEMENT SHALL BE LIMITED TO THE AMOUNT ACTUALLY PAID BY YOU FOR THE SOFTWARE AND/OR ELECTRO INDUSTRIES HARDWARE. BECAUSE SOME STATES/JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

Disclaimer

The information presented in this publication has been carefully checked for reliability; however, no responsibility is assumed for inaccuracies. The information contained in this document is subject to change without notice.

About Electro Industries/GaugeTech

Founded in 1973 by engineer and inventor Dr. Samuel Kagan, Electro Industries/GaugeTech changed the face of power monitoring forever with its first breakthrough innovation: an affordable, easy-to-use AC power meter.

Thirty years later, Electro Industries/GaugeTech, the leader in Web-Accessed Power Monitoring, continues to revolutionize the industry with the highest quality, cutting edge power monitoring and control technology on the market today. An ISO 9001:2000 certified company, EIG sets the industry standard for web-accessed power monitoring, advanced power quality, revenue metering, artificial intelligence reporting, industrial sub-metering and substation data acquisition and control. EIG's products can be found on site at virtually all of today's leading manufacturers, industrial giants and utilities.

In fact, EIG products are used globally and EIG is accepted as the world leader in power monitoring and metering technology. With direct offices in the United States, Turkey, Brazil, Mexico, Guatemala, Croatia and the Philippines, EIG support is available in most regions around the world. Our worldwide support, advanced technology and quality manufacturing standards make EIG the superior choice when dependable, reliable service is paramount.

Document Revision History:

HMI EXT User Manual V.1.01	5/17/2006	First version
HMI EXT User Manual V.1.02	2/14/2007	Screen and text updates throughout manual
HMI EXT User Manual V.1.03	10/12/2007	Updates throughout manual

Table of Contents

Warranty	ii
About Electro Industries/Gauge Tech	iv
Chapter 1: Introduction to Energy Manager EXT	
1.1: Components of Energy Manager EXT	1-1
Chapter 2: Introduction to HMI EXT	
2.1: An Explanation of SCADA	2-1
2.2: An Explanation of HMI	2-1
2.3: HMI EXT Components	2-1
2.4: HMI EXT Explorer Help Files	2-1
2.4.1: Help Topics	2-2
2.4.2: Help Guide	2-3
2.4.3: HMI Explorer Screens' Help	2-3
2.4.4: CiCode Functions	2-3
2.4.5: About	2-3
2.4.6: Context-Sensitive Help	2-4
Chapter 3: Getting Started with HMI EXT	
3.1: Installing HMI EXT	3-1
Chapter 4: Working With HMI EXT Explorer	
4.1: HMI EXT Explorer Screen	4-1
4.2: HMI EXT Project Editor Screen	4-2
4.3: HMI EXT Graphics Builder Screen	4-3
4.4: Setting up a New Project	4-4
4.5: Running Computer Setup	4-6
4.6: Setting up Your Devices	4-15
4.6.1: Using the EIG Communication Wizard	4-15
4.7: Creating the Intro Page of Your Project	4-22
4.7.1: Adding Page Navigation	4-25
4.8: Creating the Main Page of Your Project	4-26
4.8.1: Using Genies and SuperGenies	4-27
4.8.2: Using Symbols	4-29
4.8.3: Editing Symbols' Appearance	4-29
4.8.4: Creating a New Symbol	4-30
4.9: Creating Trending Pages	4-30
4.9.1: Trending Pages Through HMI EXT Explorer	4-30
4.9.2: Trending Pages Through HMI EXT Runtime	4-31
4.10: Alarms	4-32
4.10.1: Creating Alarm Pages	4-33
4.10.2: Creating Alarms	4-34
4.11: Security	4-36
4.11.1: Setting Up a User Profile	4-36

4.11.2: Setting Up Privileges	4-37
4.12: Protecting the Default Values for HMI EXT	4-38
4.13: Creating a New Project Without Using ExtBase	4-39

Chapter 5: Running an HMI Ext Project

5.1: Entering Runtime Mode	5-1
5.1.1: Logging In	5-2
5.2: Navigating to Other Project Screens and Help Files	5-3
5.3: Viewing Alarms	5-3
5.4: Launching Communicator EXT	5-4
5.5: Launching Log Viewer	5-6
5.6: Launching Script Scheduler	5-7
5.7: Launching Billing Module	5-7
5.8: Launching the HMI EXT Report Program	5-10
5.9: Viewing Meter Readings through HMI EXT	5-11
5.10: Viewing Trending Data through HMI EXT	5-13

Chapter 6: Connecting to HMI EXT through an Internet Server

6.1: Introduction	6-1
6.2: Setting Up a Client Computer	6-1
6.3: Verifying Internet Server Parameters	6-3

Chapter 1

Introduction to Energy Manager EXT

Energy Manager EXT is a powerful software **application suite** that offers you a complete and comprehensive energy management solution for even the most demanding applications. The system is based on a **modular concept** in which each module can be adapted at any time, allowing you to begin with a simple solution and expand to a more sophisticated enterprise-wide solution as need arises. In this way, Energy Manager EXT can **grow** with you as your need for better and more advanced monitoring increases. Energy Manager EXT supports applications from a small 10-point architecture to a comprehensive enterprise-wide energy management system with costing and power quality features.

1.1: Components of Energy Manager EXT

Energy Manager EXT consists of **5** separate **software application** modules. Each of these modules can be installed as an add-on to fill specific applications as needed. The 5 modules that comprise Energy Manager EXT are as follows.

- **Communicator EXT** allows you to view real-time readings, configure meters, download stored logs, and analyze waveforms. See *Communicator EXT User Manual* for details of this application.
- **Ai Reports EXT** is a basic reporting package providing an Artificial Intelligence solution to observed power quality problems. See *Ai Reports User Manual* for details of this application.
- **Dial In Server EXT** allows remote meters in the field to dial-in and report outage information. This is useful for remote meter applications where only telephone access is available.
- **Communicator Copilot EXT** works on Windows CE, allowing you to communicate to meters via IrDA or Serial communications. This allows for basic meter polling, programming, and log downloads. See *Copilot User Manual* for details of this application.
- **HMI EXT** allows you to connect a graphical Human Machine Interface to the Energy Manager software applications. With HMI EXT you can graphically view all data through a Local Area Network (LAN) or the Internet, control electrical distribution points, and compile energy usage reports easily and quickly. HMI EXT runs in conjunction with the other Energy Manager EXT applications. This manual explains how to use the HMI EXT module of Energy Manager EXT.

Chapter 2

Introduction to HMI EXT

HMI EXT, one of the major components of Electro Industries' **Energy Manager EXT** application suite, provides a **graphical interface** to the other Energy Manager applications, allowing you to easily **create** and **manage** your **metering project**. Once you have set up the HMI EXT interface for your project, you will be able to use it to view your Electro meters and related I/O devices, poll your meters, view alarms and trending, print billing reports, and perform other operations.

2.1: An Explanation of SCADA Systems

SCADA stands for **Supervisory Control and Data Acquisition**. SCADA refers to a large-scale distributed measurement and control system. HMI EXT allows you to create a SCADA system for your metering project.

2.2: An Explanation of HMI

HMI stands for **Human Machine Interface**. HMI components allow SCADA systems to present easy access and understandability to their measurements and controls. HMI EXT allows you to set up and use this interface.

2.3: HMI EXT Components

HMI EXT has two modes: **Explorer** and **Runtime**. **Explorer** is the application that allows you to set up and modify your HMI EXT project. **Runtime** is the mode in which you use the project(s) you have created.

2.4: HMI EXT Explorer Help Files

HMI EXT Explorer has an extensive **Help** library. Click the **Help button** from any of the HMI EXT Explorer screens to open the **Help menu**. The following sections describe the options available from the Help menu.

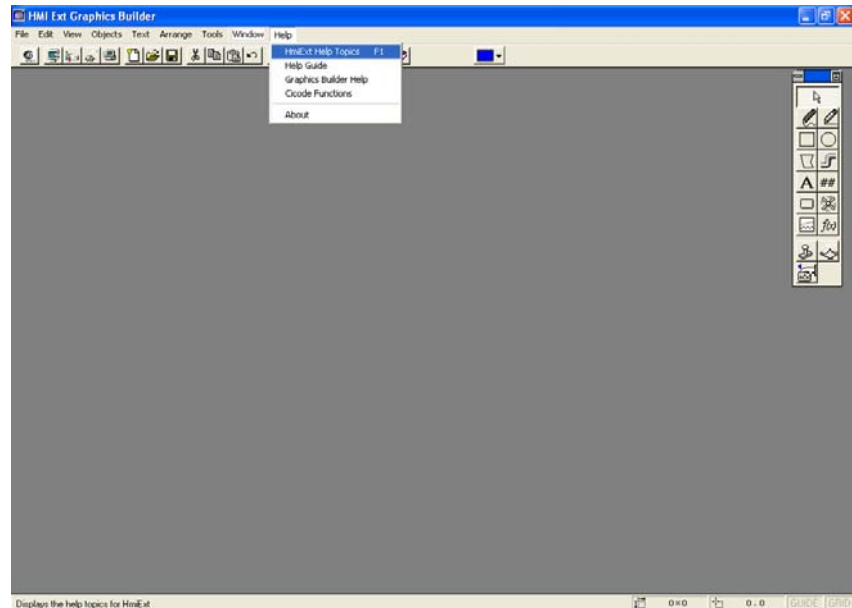
NOTE: Depending on which HMI EXT Explorer screen you are in, you may not see all of the options shown in the figure on the next page.

2.4.1 Help Topics

Click the **first option** from the **Help menu** to display the **Help Topics** screen. You can also open this screen by clicking on the **Help Topics icon** in the **Title Bar** of an HMI EXT **Explorer** screen.



Help Topics icon

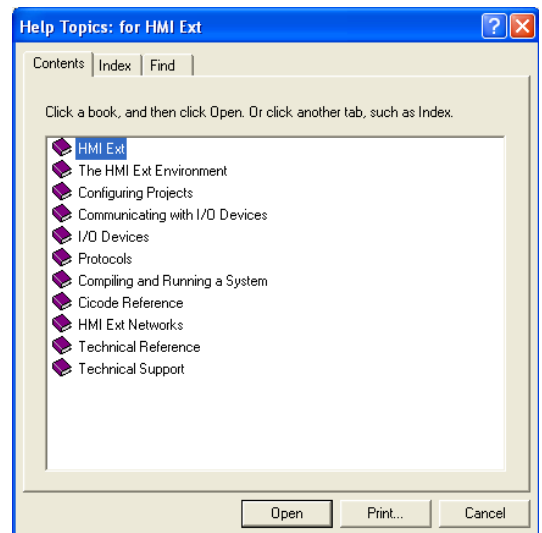


The **Help Topics** screen opens, showing the **Contents tab**. Click on chapters and sections to read related material. You can also print all or part of the Help contents.

Click the **Find tab** to open a **setup wizard** that allows you to create a **Help database**. You can use this database to **search** the Help file for occurrences of words that are not listed in the index.

Click the **Index tab** to view the **Index Help** screen. You can either:

- Key the first few letters of the term you are looking for to search the index for it. If a topic matching those letters is found, the index list moves to display that topic name. Double click the highlighted topic or click the Display button to open a file with information about the selected topic.
- Use the scroll bars to search the index for the topic you want. Then double click it or click the Display button to learn more about the topic.



2.4.2: Help Guide

Click **Help Guide** from the **Help menu** to open a graphical interface that allows you to access the Help Topics screens, a glossary, and a linked-list of help subjects, called Help Direct.



2.4.3: HMI EXT Explorer Screens' Help

- Click **Project Editor Help** from the **Project Editor screen's Help menu** to open a graphical interface screen that explains how to use the HMI EXT Project Editor.
- Click **Explorer Help** from the **Explorer screen's Help menu** to open a graphical interface screen that explains how to use HMI EXT Explorer.
- Click **Graphics Builder Help** from the **Graphics Builder screen's Help menu** to open a graphical interface screen that explains how to use HMI EXT Graphics Builder.

2.4.4: Cicode Functions

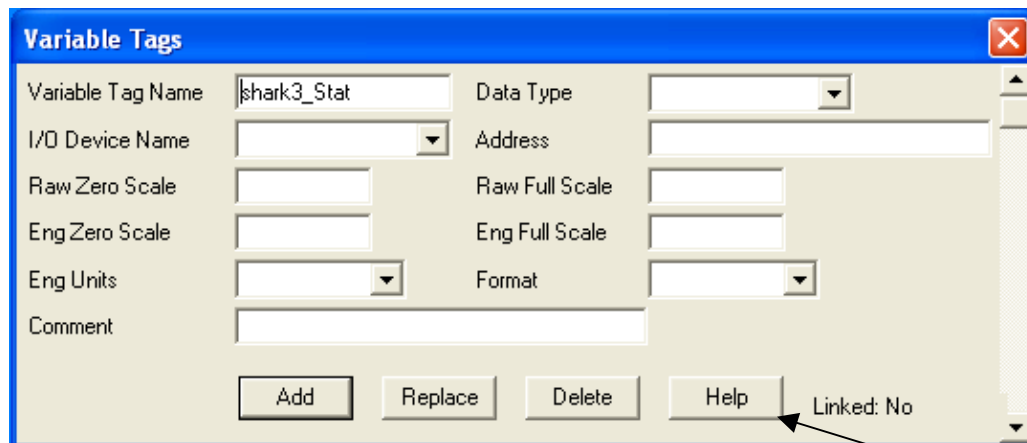
Click Cicode Functions from the Project Editor or the Graphics Builder screens' Help menu to open a screen that lists all of the Cicode functions and describes their use.

2.4.5: About

Click About from the Help menu to see the version of HMI EXT installed on your computer.

2.4.6: Context –Sensitive Help

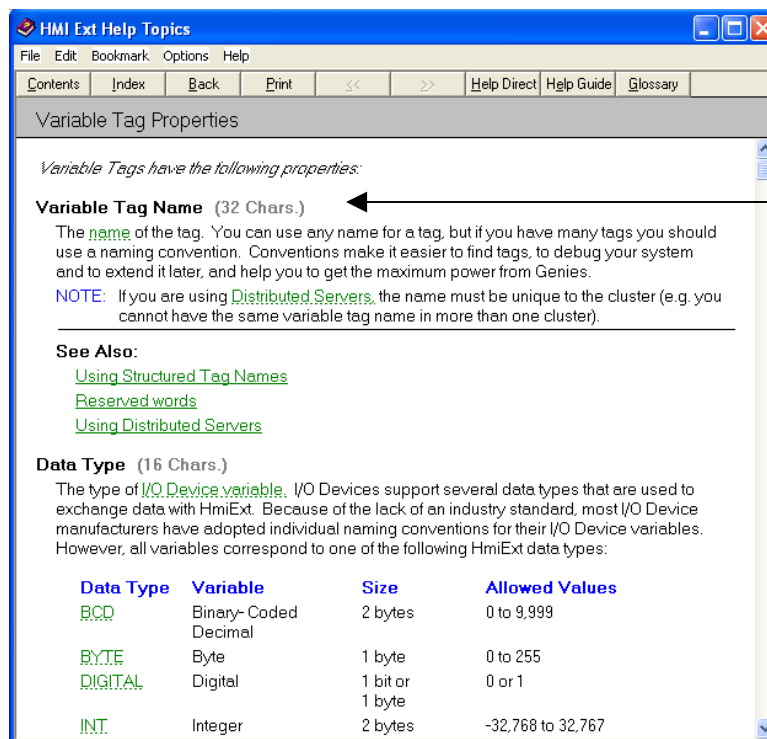
You can also access **context-sensitive Help files** from most of the **HMI EXT windows**. For example, as shown in the following figures, when you click the Help button from the Variable Tags window, a Help file opens, giving you instructions concerning the window's input fields.



The Variable Tags window is a form with the following fields and buttons:

- Variable Tag Name:
- Data Type:
- I/O Device Name:
- Address:
- Raw Zero Scale:
- Raw Full Scale:
- Eng Zero Scale:
- Eng Full Scale:
- Eng Units:
- Format:
- Comment:
- Buttons: Add, Replace, Delete, Help
- Status: Linked: No

Click Help Button



The HMI Ext Help Topics window displays the following content:

Variable Tag Properties

Variable Tags have the following properties:

Variable Tag Name (32 Chars.)

The **name** of the tag. You can use any name for a tag, but if you have many tags you should use a naming convention. Conventions make it easier to find tags, to debug your system and to extend it later, and help you to get the maximum power from Genies.

NOTE: If you are using **Distributed Servers**, the name must be unique to the cluster (e.g. you cannot have the same variable tag name in more than one cluster).

See Also:

- [Using Structured Tag Names](#)
- [Reserved words](#)
- [Using Distributed Servers](#)

Data Type (16 Chars.)

The type of **I/O Device variable**. I/O Devices support several data types that are used to exchange data with HmiExt. Because of the lack of an industry standard, most I/O Device manufacturers have adopted individual naming conventions for their I/O Device variables. However, all variables correspond to one of the following HmiExt data types:

Data Type	Variable	Size	Allowed Values
B.CD	Binary- Coded Decimal	2 bytes	0 to 9,999
BYTE	Byte	1 byte	0 to 255
DIGITAL	Digital	1 bit or 1 byte	0 or 1
INT.	Integer	2 bytes	-32,768 to 32,767

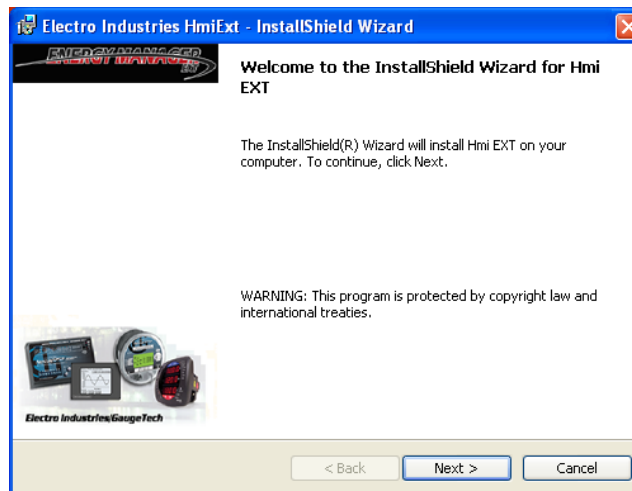
Context-Sensitive Help Opens

Chapter 3

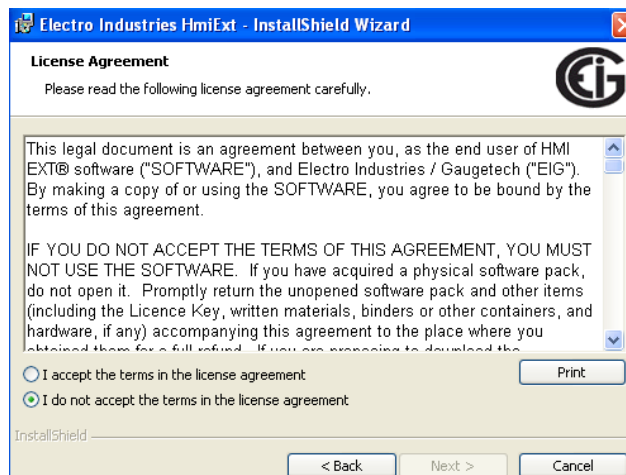
Getting Started with HMI EXT

3.1: Installing HMI EXT

1. Place the **HMI EXT CD** in your computer's CD drive.
2. Open the **Setup** file by double clicking on the **Setup.exe** icon.
3. **HMI EXT InstallShield Wizard** screen opens. The InstallShield Wizard will step you through the HMI EXT installation.



4. Click the **Next** button. The **License Agreement** screen opens.

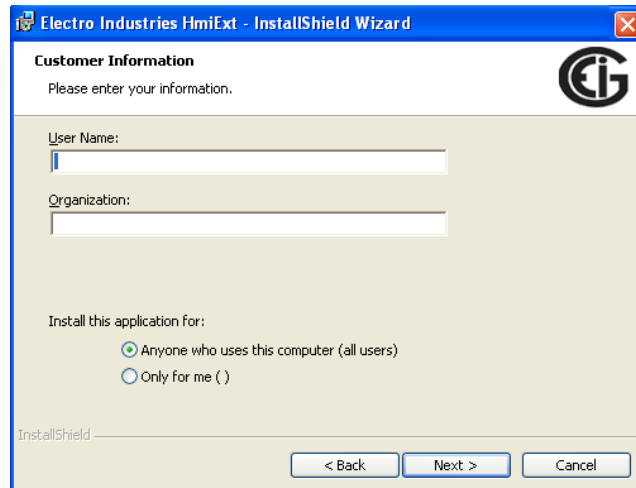


You can print the license agreement by clicking the **Print** button. Use the **scroll** buttons to view the entire agreement.

To continue with the HMI EXT installation:

- a. **Click** the radio button next to “**I accept** the terms in the license agreement.”
- b. **Click** the **Next** button.

6. The **Customer Information** screen opens.



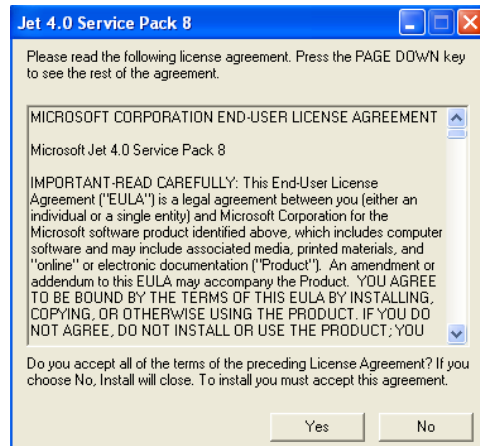
- a. Enter your **User name** and **Organization**.
- b. **Click** either radio button:
 - **Anyone** who uses this computer (**all users**)
 - **Only for me** ()
- c. Click the **Next** button to continue with the installation.

7. The **Ready to Install** screen opens.



Click the **Install** button to begin installing the HMI EXT program.

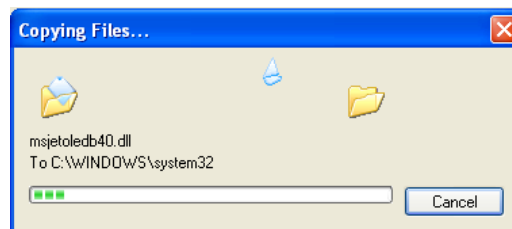
8. A **license agreement screen** for Microsoft's Jet 4.0 Service Pack 8 opens.



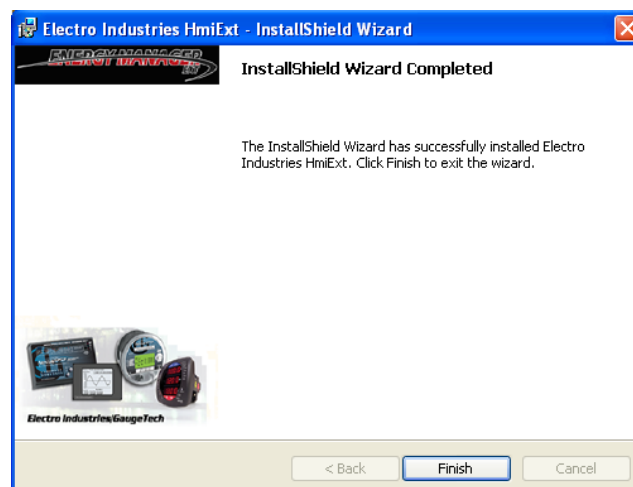
Use the **scroll** buttons to read the entire agreement.

Click the **Yes** button to continue with the installation.

9. Click the **Next** button in the **Installing HMI EXT** screen to begin file installation. You will see the **Copying Files** screen, showing your progress.



10. When installation is complete, you will see the screen shown below.



Click the **Finish** button.

11. You can now **access** the **HMI EXT** program from your **computer**. Click **Start/Programs/Electro Industries/HMI EXT**.



There are **two options** for **HMI EXT**: **Explorer** and **Runtime**.

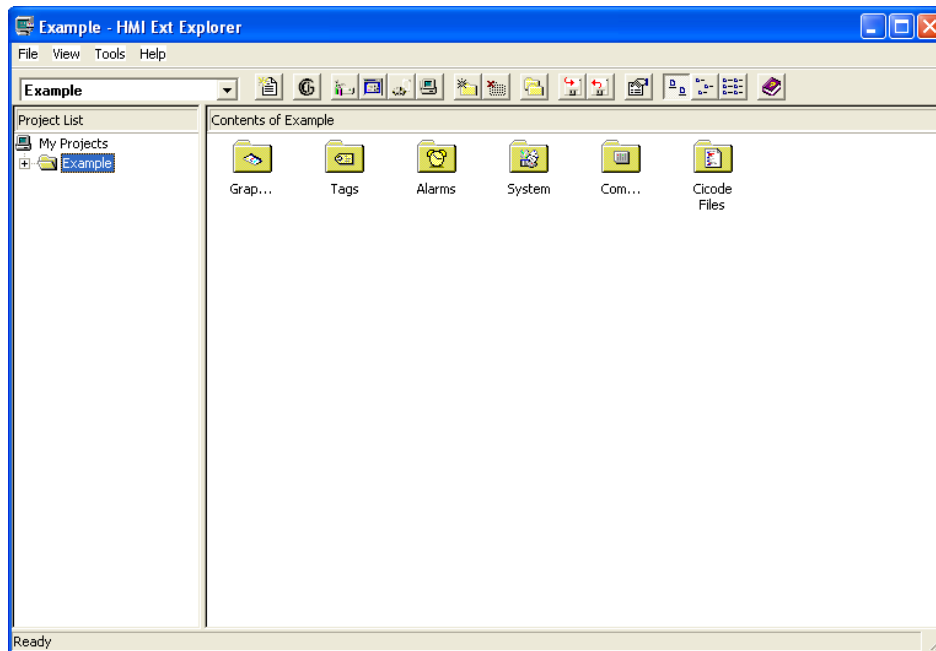
- To **set up** or **change** an HMI EXT **project**, click the **Explorer** icon.
- To **run** a **project** you have already created, click the **Runtime** icon.

Chapter 4

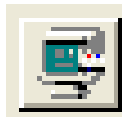
Working with HMI EXT Explorer

The **Explorer** component of **HMI EXT** consists of **three** related screens: **HMI EXT Explorer**, **HMI EXT Project Editor**, and **HMI EXT Graphics Builder**. Use these screens to **create** and **modify** your **HMI EXT project**.

4.1: HMI EXT Explorer Screen

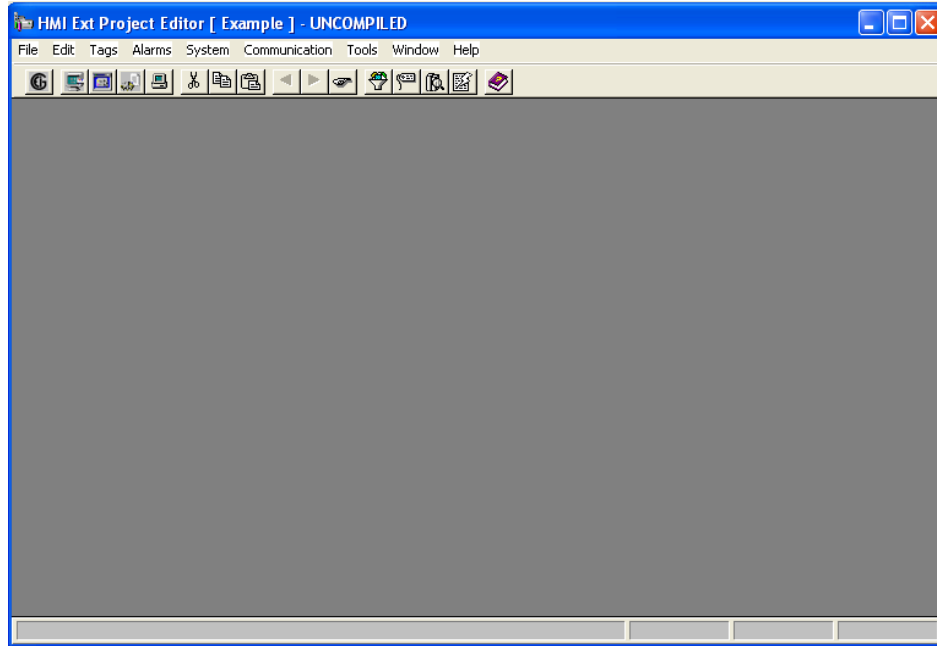


Use the **HMI EXT Explorer** screen to **create** and **manage** your **projects**. Any projects you have are listed in the **Project List** on the **left side** of the screen. The **right side** of the screen displays the **elements of your project** in the following folders: **Graphics**, **Tags**, **Alarms**, **System**, **Communications**, and **Cicode Files**. When you are in one of the other HMI EXT screens, you can access the **Explorer** screen by clicking on its **icon** in the **Title bar** of the screen.

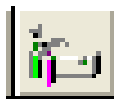


Explorer Screen icon

4.2: HMI EXT Project Editor Screen

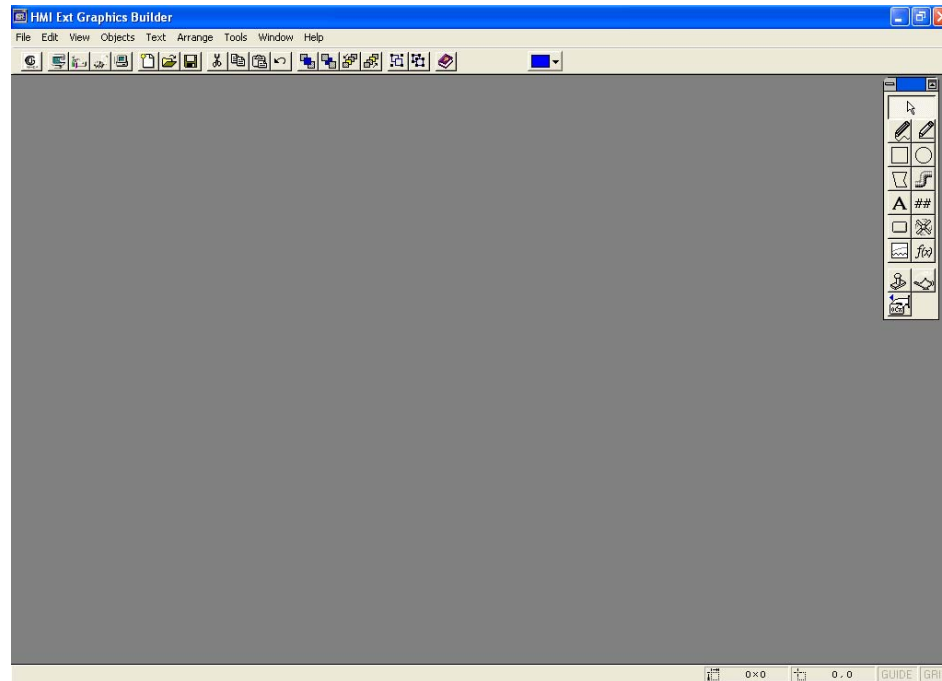


Use the **HMI EXT Project Editor** screen to **configure** and **compile** your project. When you are in one of the other HMI EXT screens, you can access the **Project Editor** screen by clicking on its **icon** in the **Title bar** of the screen.



Project Editor Screen icon

4.3: HMI EXT Graphics Builder Screen



Use the HMI EXT **Graphics Builder** screen to **create** and **edit** your **project's pages** and other **graphic elements**. When you are in one of the other HMI Ext screens, you can access the **Project Editor** screen by clicking on its **icon** in the **Title bar** of the screen.

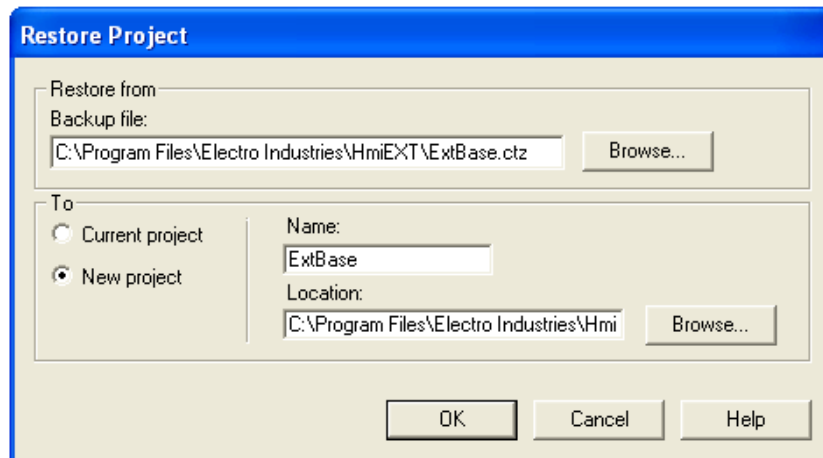


Graphics Builder Screen icon

4.4: Setting Up a New Project

IMPORTANT! The following instructions use the **ExtBase** file to create your project. **ExtBase** already contains data for **Electro meters** and related devices and software. See Section 4.12 for additional information on ExtBase. See Section 4.13 for an alternate way to create a new project.

1. From the **HMI EXT Explorer** screen, click **Tools/Restore** to open the **Restore Project** screen.

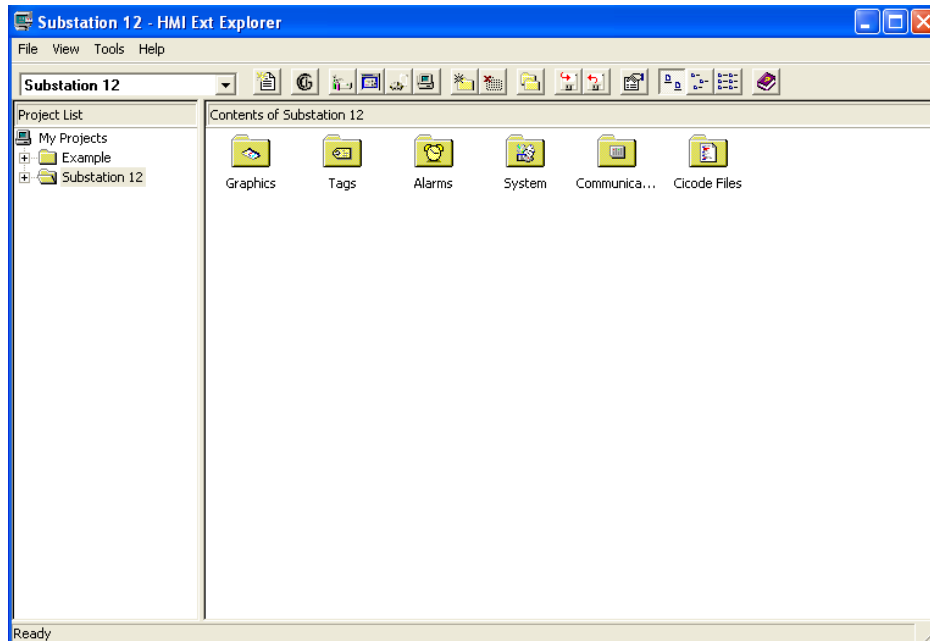


- a. Click the **Browse** button to locate the **ExtBase** file. This file came with the HMI EXT software and should be in the **HmiEXT** directory.
- b. Give a new **Name** to your project.
NOTE: HMI EXT has a few **restrictions** on **naming**:
 - HMI EXT file names cannot begin with a number.
 - In addition, the following words are reserved and cannot be used in any file, device name, or tag:
AND, ENGUNITS, NOT, ARGn (*n* = any number), FOR, OR
ARGVALUE*n* (*n* = any number), FUNCTION, PRIVATE
BCD, GLOBAL, REAL, BYTE, IF, RETURN, CASE, INT,
SELECT, DATE, IS, STRING, DIGITAL, LONG, THEN, DO,
LONGBCD, TO, ELSE, MOD, VAR, END, MODULE, WHILE
- c. Make sure the **New Project** radio button is **selected**.
- d. HMIEXT inserts the following **location** for the new project's database files:

C:\Program Files\Electro Industries\HmiEXT\User\Project Name

NOTE: We **recommend** that you **save** the project file on a **drive other than C**, to **protect** your **database** in case of system failure. If your C drive fails, you can subsequently restore your database file from the drive it was saved on.

- e. Click the **OK** button. (Click the Cancel button to exit the screen without saving the restored project; click Help for context-sensitive Help.)
2. A **message window** opens when the **Restore process** is **complete**. Click the **OK** button to close the window.
3. The **Project Editor** screen redisplay, showing your new project in the **Project List**.



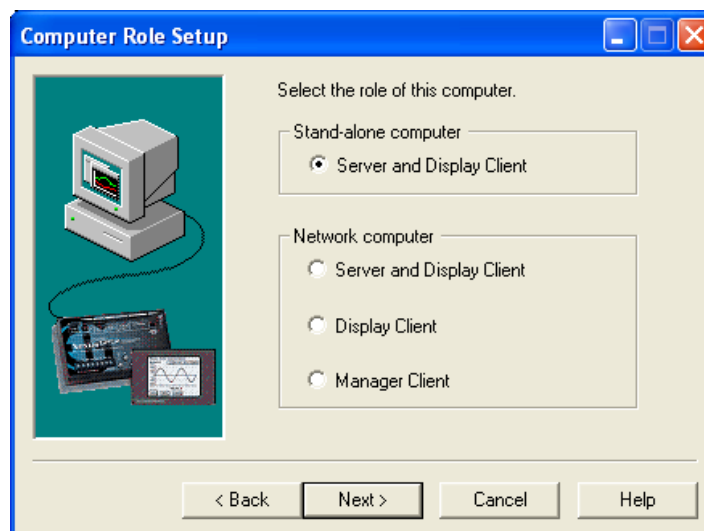
4.5: Running Computer Setup

After you have created your project, run **Computer Setup**. This operation sets up your computer as the server for HMI EXT.

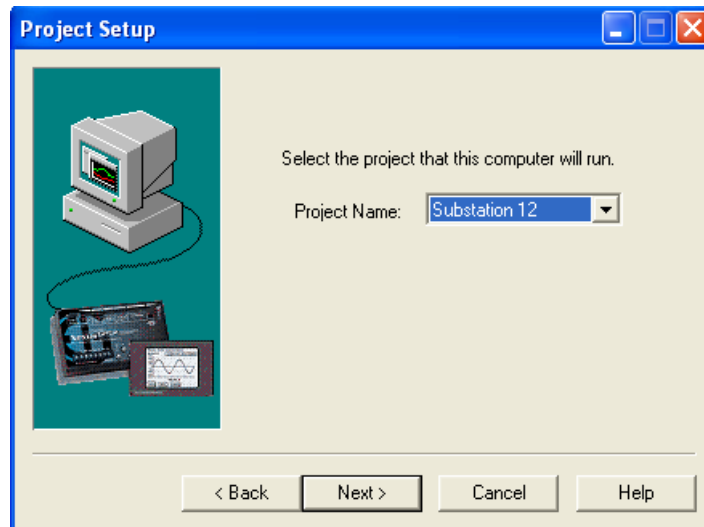
1. From the HMI EXT **Explorer** screen, click **Tools/Computer Setup**. The **HMI EXT Computer Setup Wizard** screen opens.



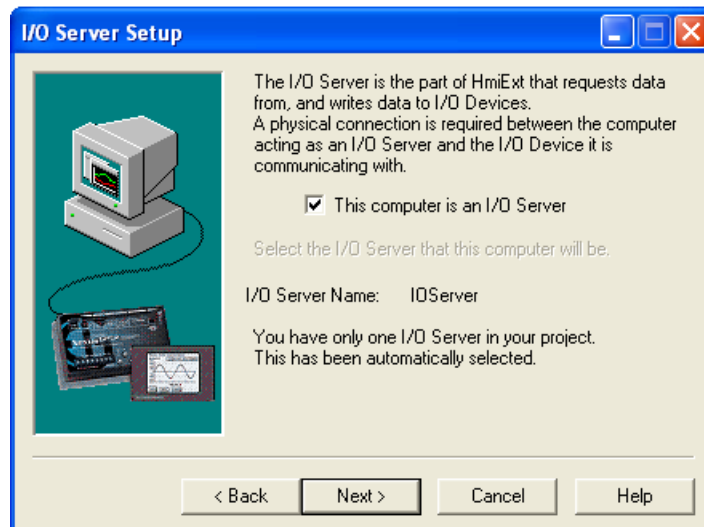
2. Make sure the **Custom Setup** radio button is **selected**. (HMI EXT does not support the Express Setup function.)
3. Click the **Next** button.
4. A screen opens, allowing you to specify the “role” of your computer. There are two options: **Stand-alone Computer** and **Network Computer**.



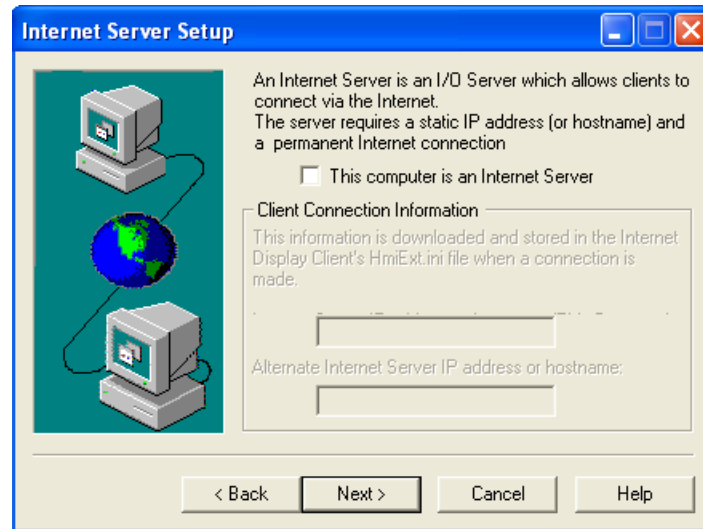
- If the HMI EXT project will be run on this computer alone, select the **Server and Display Client** radio button under **Stand-alone computer**.
 - If other computers will be accessing the HMI EXT project, select the **Server and Display Client** radio button under **Network computer**.
5. Click the **Next** button. A screen opens, allowing you to select the project you are setting up. Any open project is automatically displayed in the **Project Name** field. Click the arrow if you need to select another project from the pull-down menu.



6. Click the **Next** button. A screen opens, allowing you to select the **IO Server** that you will use. (Since **EXTBase** has only one IO Server, this screen is display only.)



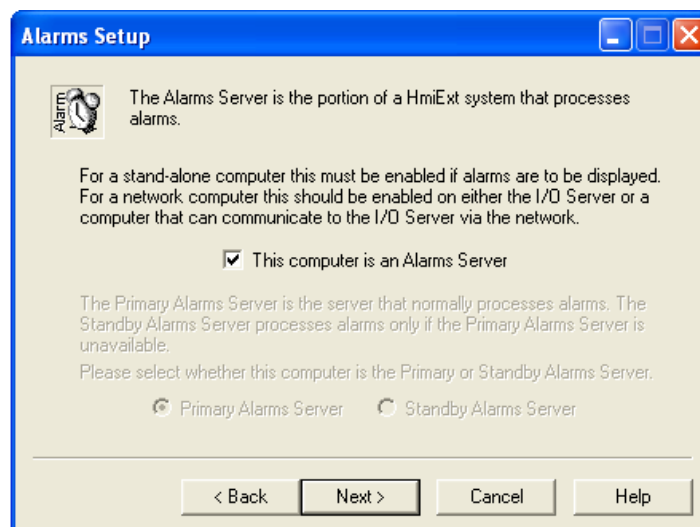
7. If you selected the **Network computer** option (see step number 4), you will see the **Internet Server Setup** screen. (If you selected the **Stand-alone computer** option, proceed to step number 8.)



- Click the checkbox next to “This computer is an Internet Server.”
- Enter the **IP Address** or **Hostname** for this computer.
- You may also enter an **alternate** IP Address or Hostname.
- Click the **Next** button.

IMPORTANT NOTE: The **Client** computer(s) use the IP Address or Hostname you entered to connect with this computer via the Internet. To set up a Client computer, see Chapter 6.

8. Click the **Next** button. The **Alarms Setup** screen opens.



9. Click the **Next** button. The **Advanced Alarms Setup** screen opens.

Alarms Setup - Advanced

These options allow you to control the way the Alarms Server operates. Consult the help for a detailed description on what these options do.

Alarms scan time: 500 milliseconds

Alarms save period: 600 seconds

Summary length: 1000 entries

Summary timeout: 60 minutes

Primary Alarms Server save path: C:\Program Files\Electro Industries\HmiEX

Standby Alarms Server save path:

< Back Next > Cancel Help

10. Default values are in the input fields. You can change these values if you want. The **Help** button opens a screen that explains the Alarm Server options.
11. Click the **Next** button. The **Reports Setup** screen opens.

Reports Setup

The Reports Server is the portion of a HmiExt system that processes and logs reports.

For a stand-alone computer this must be enabled if reports are to run. For network computers this should be enabled on either the I/O Server or a computer that can communicate with the I/O Server via the network.

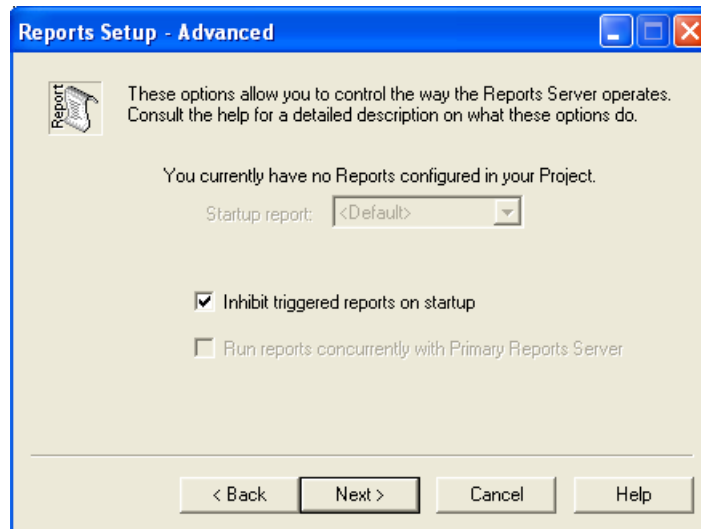
☒ This computer is a Reports Server

The Primary Reports Server is the server that normally processes reports. The Standby Reports Server processes reports only if the Primary Reports Server is unavailable. Please select whether this computer is the Primary or Standby Report Server.

☒ Primary Reports Server ☐ Standby Reports Server

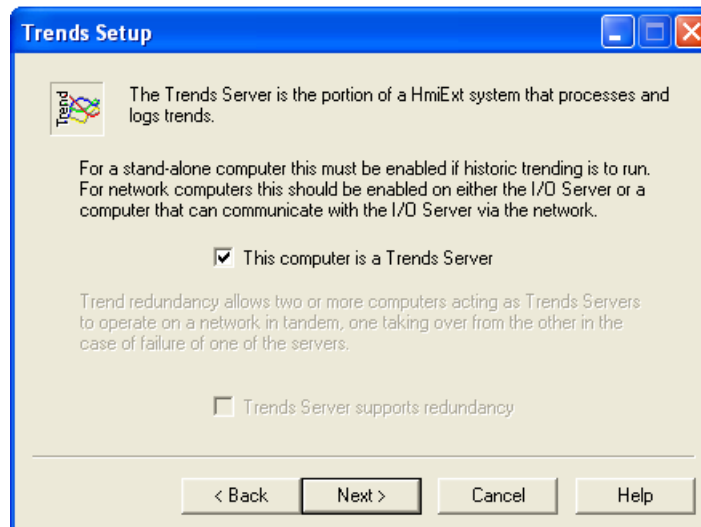
< Back Next > Cancel Help

12. Click the **Next** button. The **Advanced Reports Setup** screen opens.

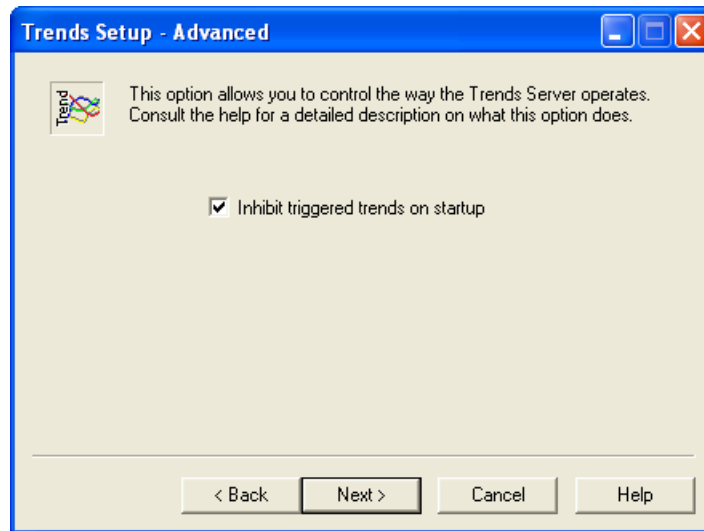


Any reports set up for your project are displayed.

13. Click the **Next** button. The **Trends Setup** screen opens.

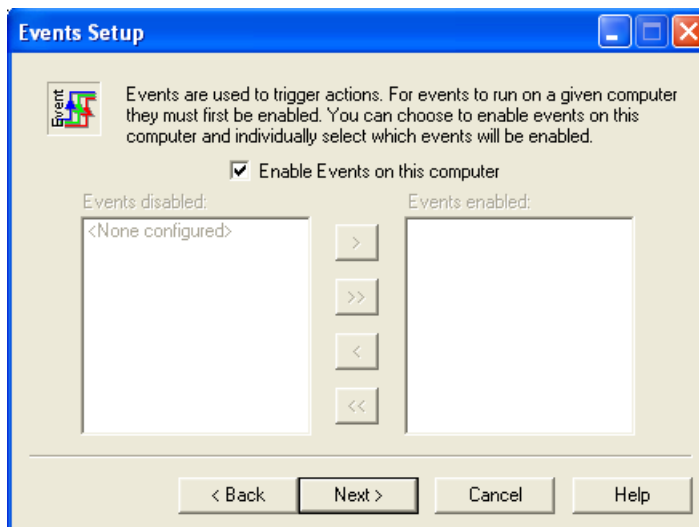


14. Click the **Next** button. The **Advanced Trends Setup** screen opens.



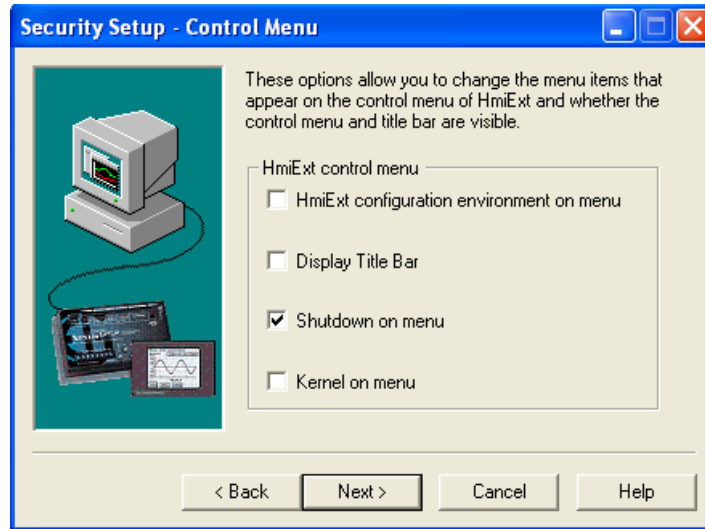
The **Help** button opens a screen that explains the **Trends Server** options. You do not have to change anything on this screen, since HMI EXT already has trending options programmed into it.

15. Click the **Next** button. The **Events Setup** screen opens.



Any Events set up for your project are displayed. The **Help** button opens a screen that explains the Events options.

16. Click the **Next** button. The **Security Setup Control Menu** screen opens.



The **Help** button opens a screen that explains the Control Menu security options.

NOTE: When you are setting up your project, you should check the first three options. Once your project is running, for security purposes, we recommend you **uncheck** these options. For example, if you are running a SCADA system, you do not want the operator to be able to shutdown the project from the Menu Bar.

CAUTION! Do NOT check the last option “Kernel on menu.” This option allows changes that can seriously affect the proper functioning of HMI EXT.

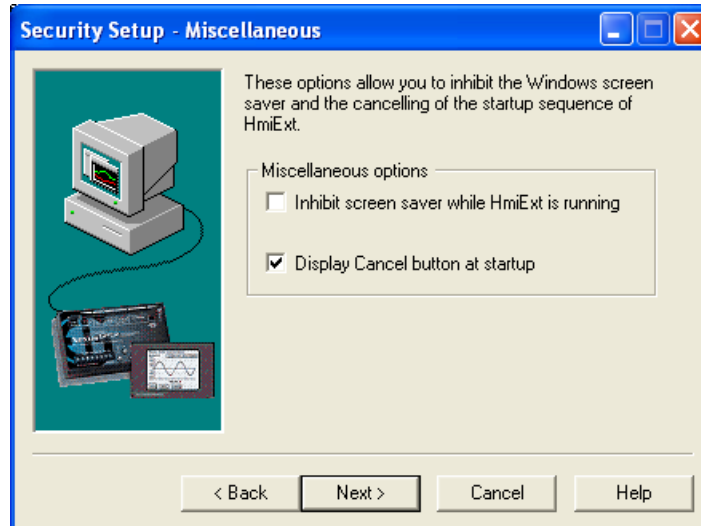


The **Help** button opens a screen that explains the Keyboard Security options.

NOTE: For security purposes, you may want to disable the Alt-Space shortcut.

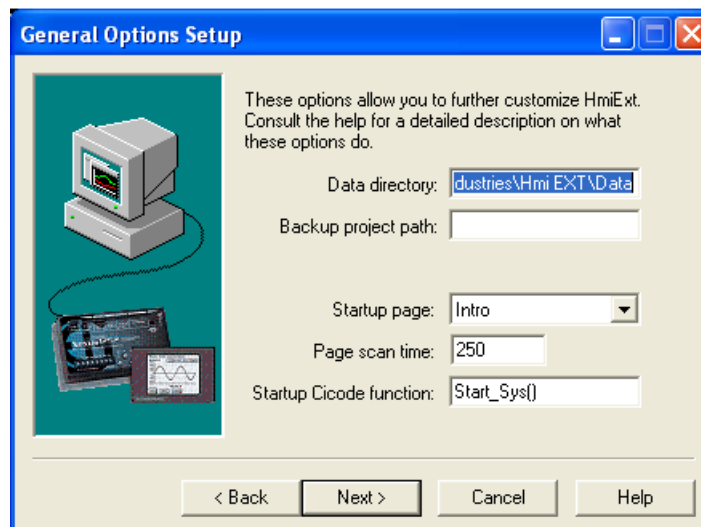
(If the Alt-Space shortcut is disabled, the HMI EXT program will be “locked” onto the monitor display.)

18. Click the **Next** button. The **Security Setup Miscellaneous** screen opens.



The **Help** button opens a screen that explains the security options on this screen.

19. Click the **Next** button. The **General Options Setup** screen opens.

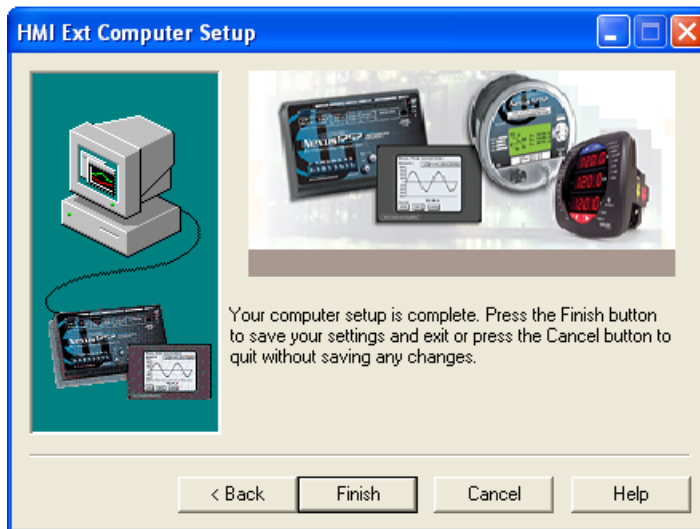


The **Help** button opens a screen that explains the general setup options.

IMPORTANT!

- The **Startup Cicode function** entry **must** be: **Start_Sys()** for HMI EXT to function properly.
- Select the **Startup page** from the pull-down menu. This is the first screen you'll see when the project is run. **Intro** is the recommended choice.
- You can enter a backup path if you are running a redundant system for your project.

20. Click the **Next** button. (Click the Cancel button to cancel the setup.) A screen opens telling you that setup is complete.



21. Click the **Finish** button to **save** your **settings**. (Click the Cancel button to exit without saving your settings; click the Help button for context-sensitive Help.)

IMPORTANT NOTE: If you set up the computer as an Internet Server (see step numbers 4 and 7), refer to Chapter 6 for further instructions.

4.6: Setting Up Your Devices

Once you have run Computer Setup, set up your devices, e.g., your Electro meters.

IMPORTANT! The server, boards, port, and I/O devices were already copied to your project when it was restored from ExtBase. Refer to Section 4.12 for information concerning correct device and communication options.

4.6.1: Using the EIG Communication Wizard

Use the **EIG Communication Wizard** to **add** and **set up communications** with your **I/O devices**, e.g., your **meters**. You **access** the EIG Communication Wizard from the **Intro Page** of your **project**. The EIG Communication Wizard creates the record for your **device** and also the **variable** and **trend tags** that allow you to **access** and **retrieve data** for the meters in your project.

1. **Run your project** by clicking the **Run icon** on the **Title bar** or clicking **File>Run**.

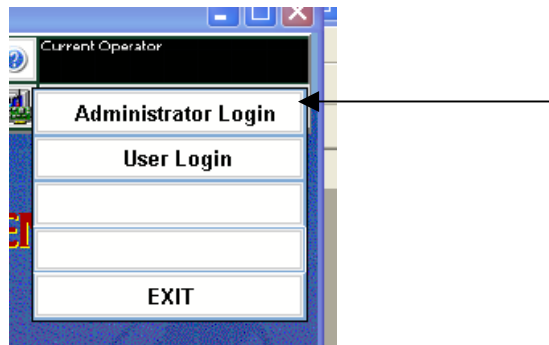


Run icon

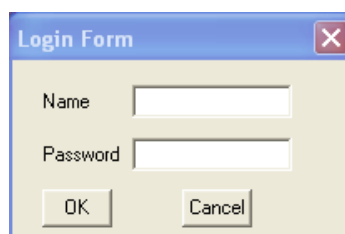
2. Your **project compiles** and then **opens** in **Runtime** mode. Click the **Login** button, located on the upper right side of the screen.



3. The **Login Menu** opens. Click **Administrator Login**.



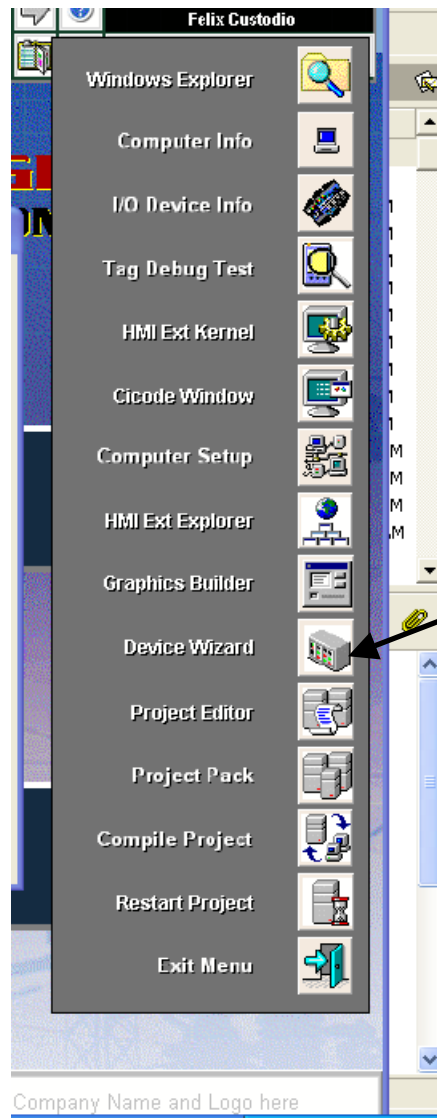
4. The **Login Form** screen opens.



5. Enter:
 - a. **Name:** HmiExtAdmin
 - b. **Password:** 13572468
6. Click the **Display Setup Menu icon** on the **Title bar**. The **Setup Menu** opens.



Display Utility Popup Icon

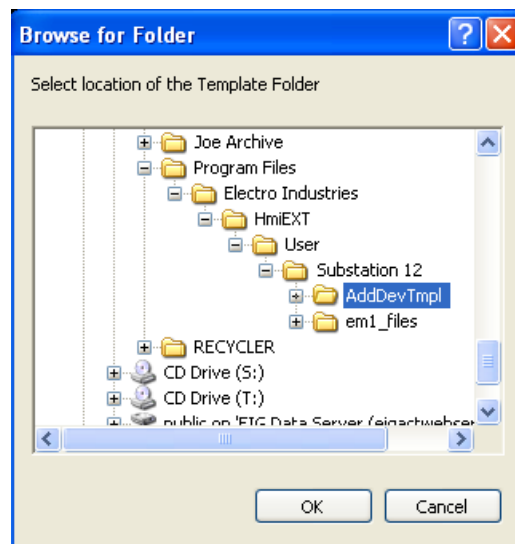


7. Click **Device Wizard**.

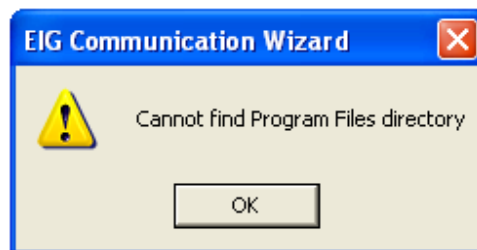
NOTE: The **first time** you select the **Device Wizard** for a **new project**, HMI EXT opens screens that ask you for **information** it needs to **locate files**. You will only see the message screens in steps a-d this first time.



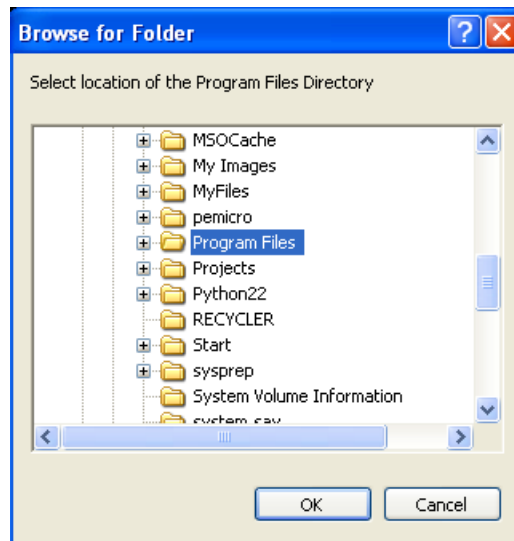
- a. Click the **OK** button. The **Browse for Folder** screen opens, allowing you to locate the required **Template directory**.



- b. **Locate** the **directory** where your project is stored and double-click the **project's folder** to open it. You will see the **AddDev Tmpl** folder. Highlight the folder and click the **OK** button. The following screen opens.



- c. Click the **OK** button. The **Browse for Folder** screen opens, again, allowing you to locate the **Program Files** directory.



d. Locate the **Program Files** folder on the drive where the HMI EXT program files are stored. Highlight the Program Files folder and click the **OK** button.

8. The **EIG Communication Wizard** screen opens.



9. The **Current Project** field displays the last project selected in **HMI EXT Explorer**.

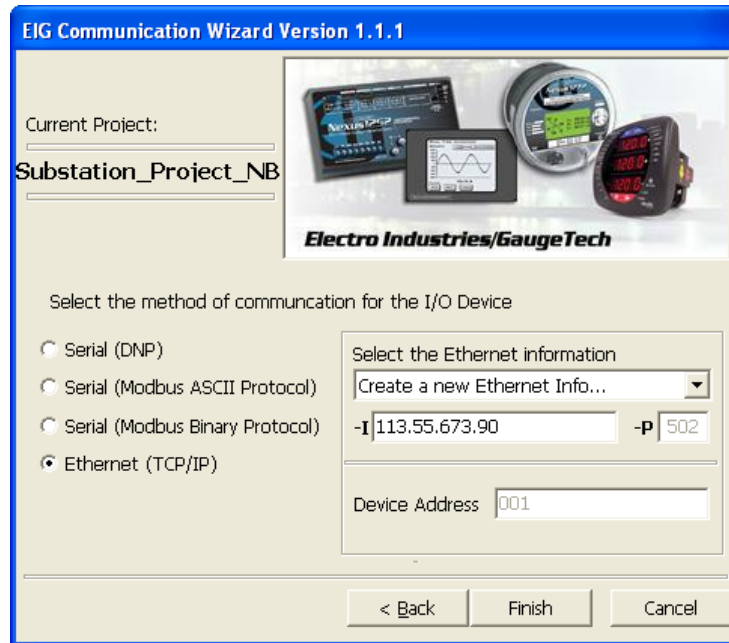
10. Select from the pull-down menus:

- **I/O Device:** the **device** you want to set up or the **Create a new I/O Device** option.
- **Type:** for a new device. Select from **DMMS**, **NEXUS**, or **SHARK**.

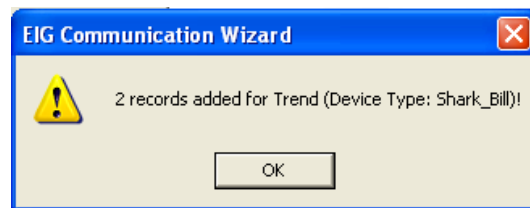
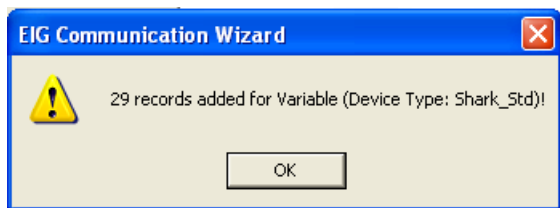
- **Address:** for a new device. This is the **modbus address** for the device. You can select from 1-247.
11. Enter the **Name** of a **new device**. The name can be up to **6 characters**. If you enter less than 6 characters, underscores (_) are used to increase the name to six characters.
 12. For an **existing device**, click the **checkbox** next to the template you want to use. We recommend you use the **Standard template** (_Std). This template has all of the **EIG measured parameters** programmed into it. For custom parameters, contact EIG.
 13. Click the **Next** button. A screen opens that allows you to set up the **communication configuration** for the **device**. (Click the Cancel button to exit the Wizard without making any changes.)



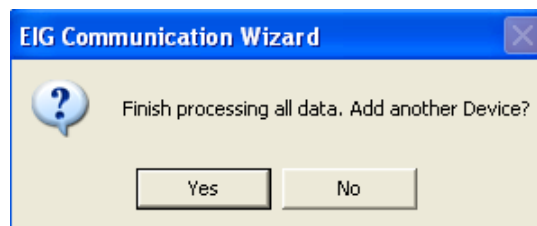
14. Click the **radio button** next to **Ethernet**. The right side of the screen changes to allow you to enter an IP address for the device. See the example screen shown below.



15. The **Device Address** and **port (-P)** fields are display only. Enter the **Ethernet address** in the same format as the example address in the following format:
“xxx.xxx.xxx.xxx”
16. Click the **Finish** button. (Click the Back button to return to the previous screen; click the Cancel button to exit the Wizard without making any changes.)
17. A series of message windows open telling you how many **records** have been **added** for the device you chose, for **Variable** and **Trend tags**.



18. Click the **OK** button to close each message screen.
19. A message window opens asking if you want to add another device.



20. Click:

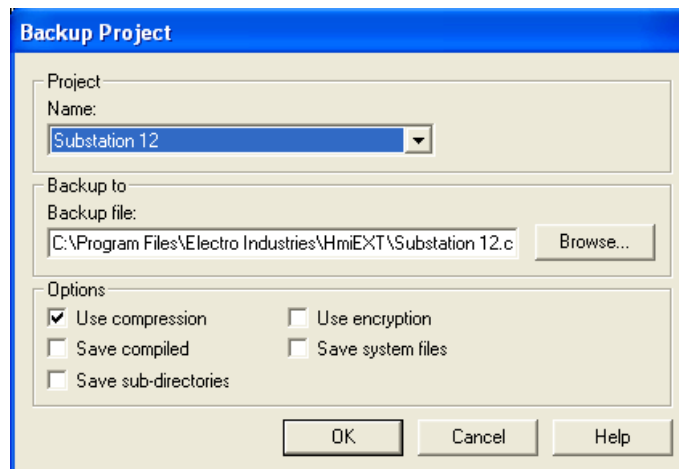
- The **Yes** button to open the first EIG Communication Wizard screen. Follow the prior procedure for any additional devices you want to set up.
- Click the **No** button to **exit** the Device Wizard.

NOTE: When you exit the Device Wizard a log file is created and stored in the Data folder of the Hmi EXT Directory on your computer. This log file lists all of the devices that were added using the Device Wizard. The log file is named CreatedDeviceLogxxxxxx.txt, xxxxxx being the date the file was created, in the format MMDDYY (Month-Month, Day-Day, Year-Year).

21. The **Project** you updated is **packed** and **recompiled**. **Message screens** informing you of this process appear briefly on the screen. You do not need to respond to these message screens.

IMPORTANT!

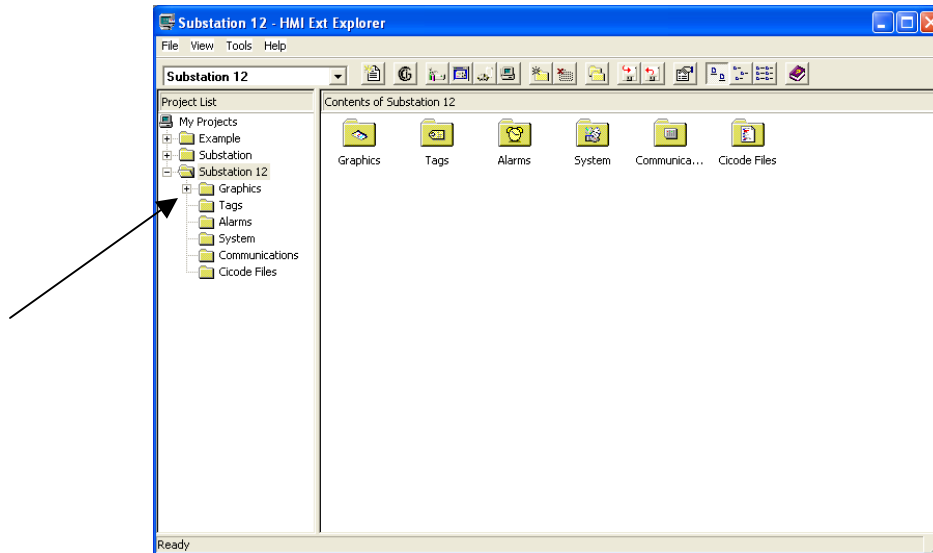
- When you have made **changes** to **Communications options**, click **File/Pack** to **update** the device **database** **before** **compiling** your project.
- **Before making changes** to your project, create a **backup copy**. This way, you can always restore the project if necessary. Select **Tools>Backup** from the **HMI EXT Explorer** screen. The following screen opens, allowing you to specify a **location** for your **backup database file**, and **choose** data processing **options**.



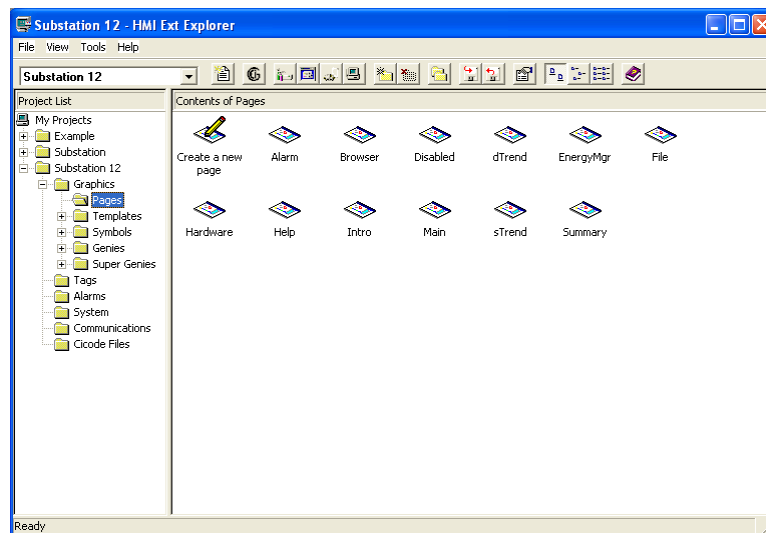
4.7: Creating the Intro Page of Your Project

The **Intro Page** is the **first page** you see when you run your HMI EXT **project**. It contains the **link** to the **Communicator EXT program** and **buttons** linking to other **pages** in your project. Follow this procedure to create your Intro page.

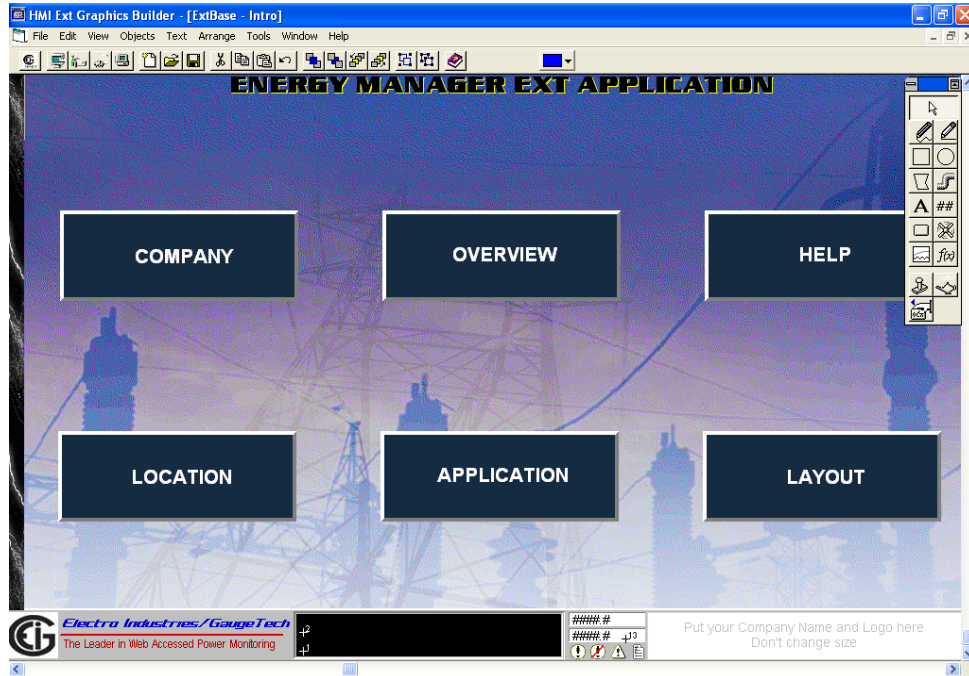
1. From the **HMI EXT Explorer** screen, double-click on your **Project** in the Project List.
2. Click on the + **sign** next to the **Graphics** folder.



3. Click the **Pages** folder. The right side of the screen now contains icons for the pages for your project. (The data in these pages is coming from the ExtBase file.)



4. **Double-click** the **Intro** icon. The **Intro Page** opens in the **HMI EXT Graphics Builder** screen. You may need to use the scroll buttons to view the entire page.
NOTE: You can also open the Intro page from the **HMI EXT Graphics Builder** screen. Click **File>Open>Page** and select **Intro** from the page list.



Use this page as a **template** for the **Intro**, or **Home**, page of your **project**. This screen contains the **links** that allow you to navigate to **other screens** in your project and to access the **Billing Reports** and **Communicator EXT** modules.

Some **parts** of this screen **cannot be changed**. For instance, the **Title Bar** containing the buttons that allow you to access Communicator EXT and other screens cannot be changed.

Anything that **can be changed** is **selectable**. When you click on an editable object, **resizing boxes** appear it. **Double-click** on the object to **change** it. **For example**, to change the text in the **Company** box, double-click on the word “Company.” The **Text Properties** screen opens, allowing you to change both the **text** and its **properties**.

The **template** in the **upper right side of the screen** shows **symbols** that allow you to **edit** the page. If you move your cursor over a symbol its **description** appears. **Click** on the **symbol** to **select** it. The **symbols** and their **properties** are as follows:

- **Select Tool:** allows you to select an item on the page.
- **Free Hand Line:** allows you to draw a curved line.
- **Straight Line:** allows you to draw a straight line.
- **Rectangle:** allows you to place a box.
- **Ellipse:** allows you to place a circular image.
- **Polygon:** allows you to place a multi-sided object.
- **Pipe:** allows you to place a pipe shape.
- **Text:** allows you to place a text box.
- **Number:** allows you to place numbers.
- **Button:** allows you to place a button.
- **Symbol Set:** allows you to place a symbol set.
- **Trend:** allows you to place a Trend and its associated Trend tag.
- **Cicode Object:** allows you to place a Cicode command.
- **Paste Symbol:** allows you to place a symbol. For example, the Electro meters are available as symbols.

IMPORTANT! The “**symbols**” of **Electro meters** do not have **parameters programmed** with them. Only use them if you just want to place an **image** of the **meter** on the page, without wanting to connect to actual meter readings from it.

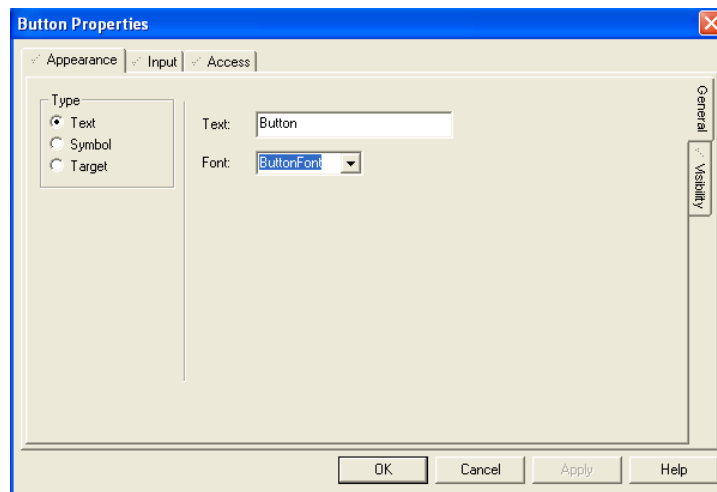
- **Paste Genie:** allows you to place a symbol that has been programmed with certain parameters. For example, the **Electro meters** are set up as **Genies**, so that you can **poll** them and view **trending** for them.
- **ActiveX:** allows you to set up **Active X Controls** for the page.

At the **bottom right corner** of the **Intro Page**, there is a box where you can enter your company’s name and logo. See Section 4.8.4 for additional information.

4.7.1: Adding Page Navigation

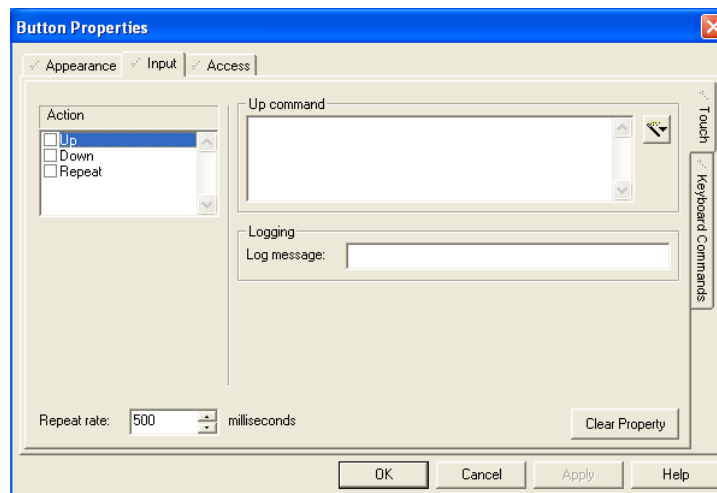
To create links to other pages in your project:

1. Click the **Button icon** on the **symbols template**.
2. **Click and drag** with your cursor to **place** the button on the page. The **Button Properties** screen opens.



You can set the **appearance** of the button (**Appearance tab**) and **restrict access** to the screen it calls (**Access tab**). To **change** the **name** of the button, use the **Text** field. The **Font** field allows you to select the font for the text you enter.

3. To **link** the **button** to another **page**, click the **Input tab**. The following screen opens.



4. To cause a **button click** to bring you to another **screen**:
 - a. Click the **check box** next to **Up**.
 - b. **Key** the following in the **Up Command box**:
PageDisplay("PageName")

NOTE: Insert the name of the page you want to link to, inside the quotation marks. Each page you create must be given a unique name.

- c. Click the **OK** button to save your entry.

IMPORTANT! After you have made changes to the **Intro** page, click **File>Save** to save it.

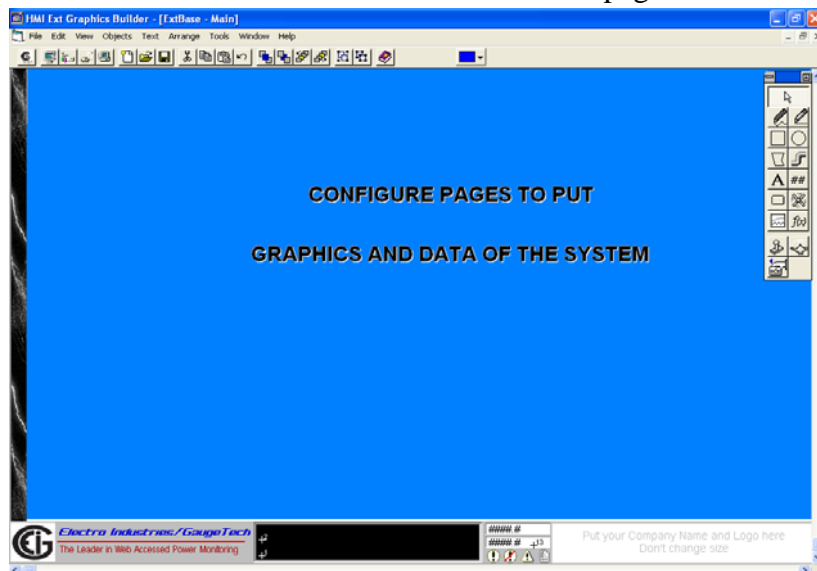
4.8: Creating the Main Page of Your Project

The **Main Page** allows you to view the Electro meters and any other devices in your project. You may have more than one **Main Page** if your project has more than one location. Remember to give each page a **unique name**. From the **Main Page** you **connect** to your **meters** to **poll** them and perform any other operations. Follow this procedure to **create** the **Main Page** for your project.

1. From the **HMI EXT Explorer** screen:
 - a. Double-click your **project name** in the **Project List**.
 - a. Click the **+** **sign** next to the **Graphics** folder.
 - b. Click the **Pages** folder.
 - c. Double click the **Main Page icon** on the right side of the screen. (See the screen capture on page 11.)

NOTE: You can also open the **Main Page** from the **HMI EXT Graphics Builder** screen. Click **File>Open>Pages** and select **Main** from the page list.

2. The **Main Page** opens in the **HMI EXT Graphics Builder** screen.
You may need to use the scroll buttons to view the entire page.



Use this **page** as a **template** to develop the **system pages** of your **project**, showing your meters and other devices. This screen also contains **links** to other screens in your project and to the **Billing Reports** and **Communicator EXT modules**. Refer to the Section 5.2 of Chapter 5 for an explanation of the **Title Bar icons**.

Some **parts** of this screen **cannot be changed**: for instance, the **Title Bar**, and most of the **bottom of the screen**.

As with the **Intro Page**, anything that **can be changed** is **selectable**. When you click on an editable object, **resizing boxes** appear around it. **Double-click** on the object to **change** it.

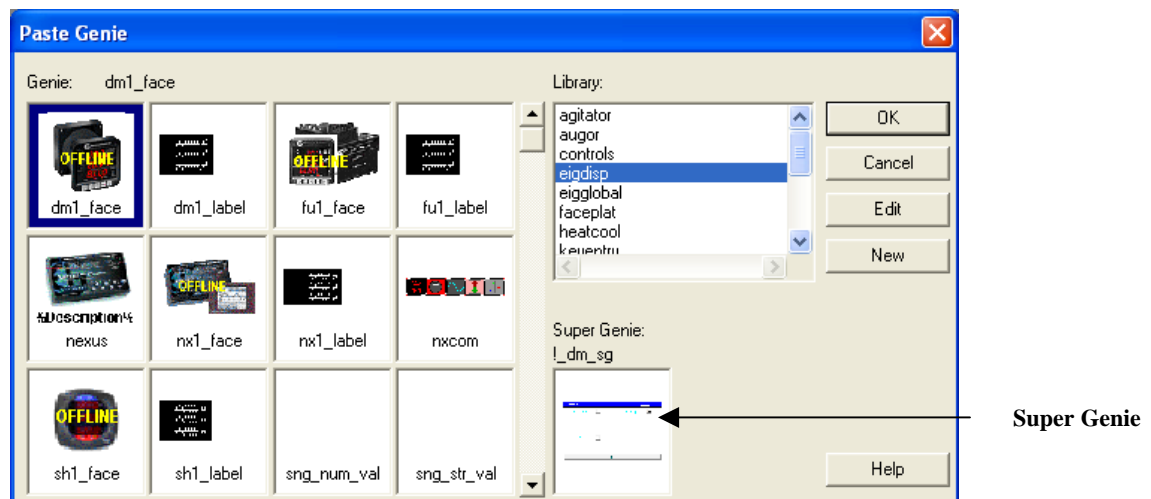
The **Main Page** also has a **template** located in the **upper right side** of the screen. Refer to the instructions on page 4-21 for details on using the template.

3. Place **graphics** and **text** as you wish on the page. Click **File>Save** when you are finished. Repeat the process for any additional pages, using **File/Save As** to give each **page** a **unique name**. You will use the **name** in **creating links** between the **Intro Page** and the **main pages**. (Refer to Section 4.7.1 for details.)

4.8.1: Using Genies and Supergenies

Genies are used to **place meters** and other **devices**. **Genies** already have **polling** and **trending** parameters (variable and trending **tags**) programmed for them.

1. Click the **Paste Genie** icon in the **Symbols Template**. The **Paste Genie** screen opens. All of the meter genies are in the **eigdisp** library.
2. Click **eigdisp** to see the display the meter genies.



3. Click a **Genie** to select it. If the Genie has a **Super Genie** associated with it, that information is displayed on the bottom right of the screen.

NOTE: A **Super Genie** performs an **enhanced function** for a **Genie**. For example, the Super Genie for a meter opens a screen that displays the polled readings for the meter. **Super Genies**, as well as **Genies**, have **already** been **set up** for the Electro **meters**. The following **parameters** are available for **all** of the **EIG meters**:

- Vab
- Vbc
- Vca
- Ia
- Ib
- Ic
- Watt Total
- VA Total
- Frequency
- Power Factor Total

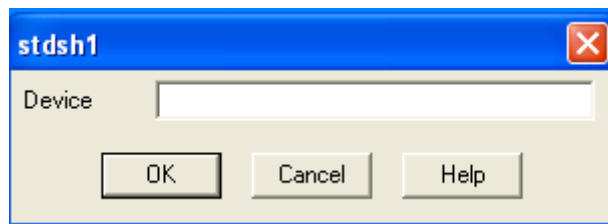


Nexus™ Meter Polling Icon Genie



Nexus™ Meter Icon Genie

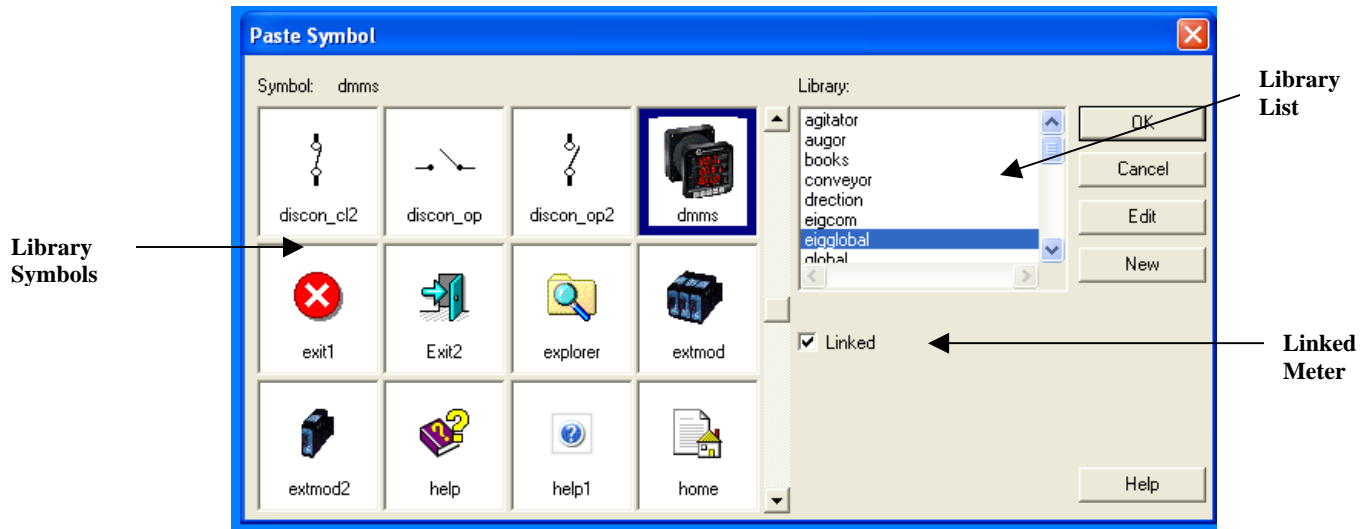
4. The **Meter** genie or **Polling** genie is placed on the page and a screen opens that prompts you for the **device name**.



5. Enter the **device name** set up in the **EIG Device Communication Wizard**.
6. Click the **OK** button. (Click the Cancel button to exit without placing the device Genie; click the Help button to open context-sensitive Help.)

4.8.2: Using Symbols

1. To place a **symbol** on the page, click the **Paste Symbol** icon in the **Symbols Template**.
2. The **Paste Symbol** screen opens. Make sure you are in either the **eigcom** or **eigglobal** library. Use the **scroll bars** to select a library from the list.



3. The left side of the **Paste Symbol** screen displays the symbols in the library you selected. Use the **scroll bars** to view all symbols in the library.
4. Click on a **meter** in the **symbol display** to **select** it. To **link** the meter to the library, be sure the **linked check box** is selected. A **linked meter** will be **updated** any time the **symbol** is **edited** in the library.
5. Either click the **OK** button or double click the symbol to copy it to the page. You can click and drag the meter anyplace on the page, except in un-selectable areas.

IMPORTANT! The **symbol** of a meter **does not have** any **tags** associated with it. It does not display any values when it is selected in runtime. Place **Meter Genies** if you want to view polling and trending features. See prior section, 4.8.1.

4.8.3: Editing Symbols' Appearance

To **edit** a **symbol**, **select** the symbol from the **Paste Symbols** screen (see prior Section, 4.8.2) and click the **Edit** button. The symbol appears in a screen that allows you to change its appearance.

4.8.4: Creating a New Symbol

To make a **new symbol** for a page, for instance, a picture of a facility or your company logo, click the **New** button from the **Paste Symbols** screen (see Section 4.8.2). A screen opens that allows you to import an image file and edit it.

Save the new symbol by clicking **File/Save As**, naming the symbol, and choosing the library in which you want it saved. You can then select the new symbol from the **Paste Symbols** screen and place it on a page.

4.9: Creating Trending Pages

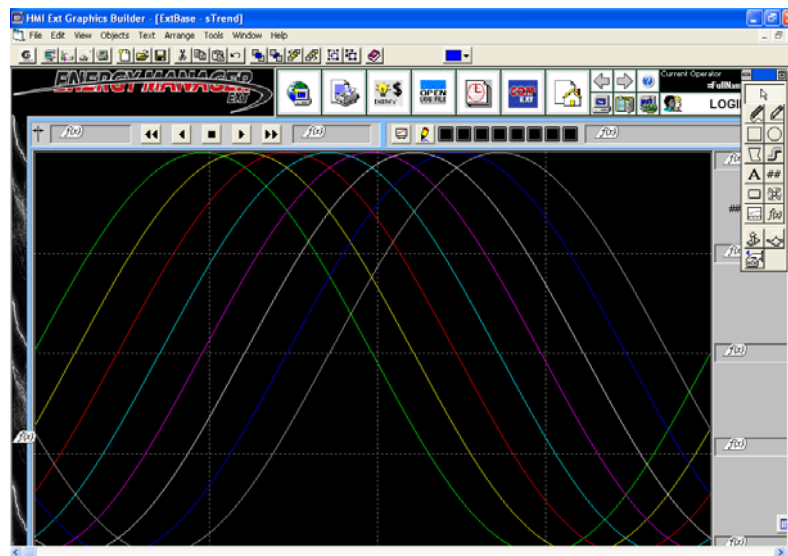
Trending pages display measured values over time. **Two Trending pages** are already set up for you: **strend**, which shows trending for a single meter; and **dtrend**, which shows trending for two meters.

You can **create** additional **trending pages** by using the **File-Save As** command from the **HMI EXT Graphics Builder** screen. Remember to place **links** to the Trending pages from the Main page of your project. (See Section 4.7.1, earlier in this chapter.)

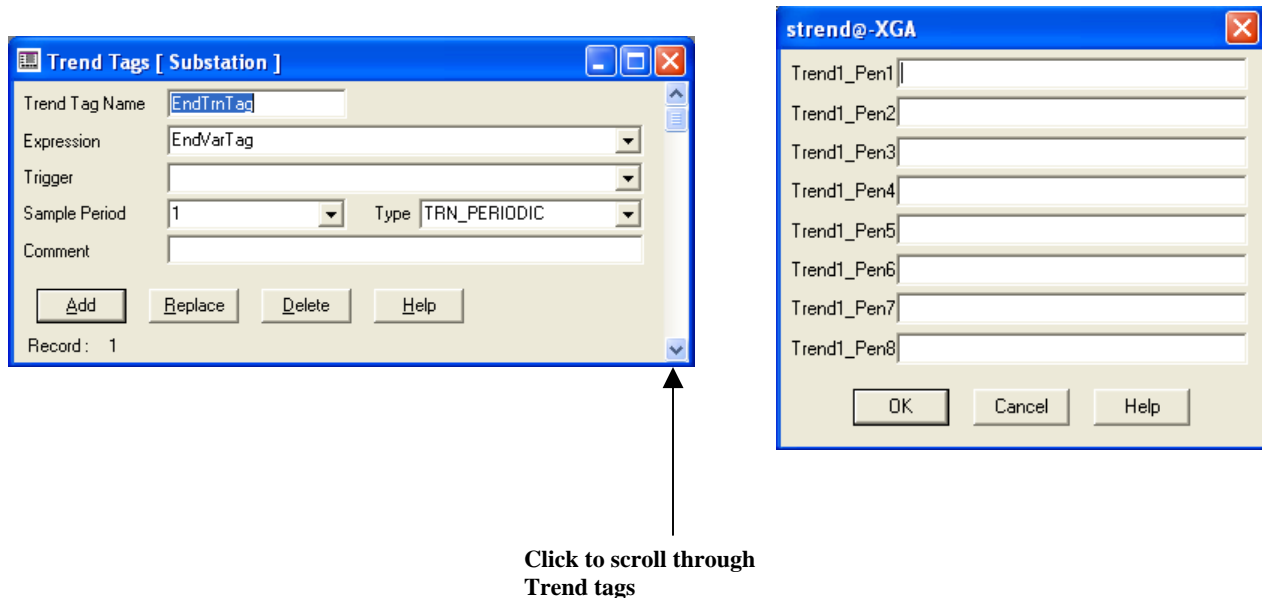
There are **two ways** to specify the parameters you want to see in the **Trending pages**: by **creating** the **Trending page** through **HMI EXT Explorer**, and by **creating** the **Trending page** through **HMI EXT Runtime**.

4.9.1: Creating Trending Pages through HMI EXT Explorer

1. Click the **sTrend** page icon from the **HMI EXT Explorer** screen or click **File-Open Page** and select **sTrend** from the **HMI EXT Graphics Builder** screen. The **sTrend** page opens in the **Graphics Builder** screen. Use the **scroll buttons** to view the entire page.



2. **Double-click** one of the $f(x)$ symbols on the screen. A screen opens that allows you to **select the parameters** you want to **display** (shown below on the right). You can specify up to **8 Trend tags per meter**. You can **view** the available **Trend tags** by selecting **Tags-Trend Tags** from the **HMI EXT Project Editor** screen (shown below on the left). Press the **down arrow** to scroll through all of the Trend tags for your meter. Enter the Trend tags you want to see on this page.



3. Click the **OK** button to add the Trend tags for the page. (Click the Cancel button to exit without adding the Trend tags to the page; click the Help button for context-sensitive Help.)
4. Click **File-Save**.

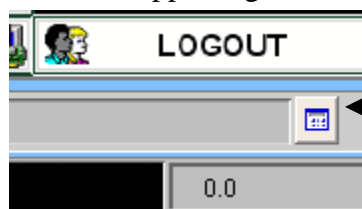
NOTE: The process is the same for the **dTrend** page, except that you can select up to 8 parameters for each of two meters.

4.9.2: Creating Trending Pages through HMI EXT Runtime

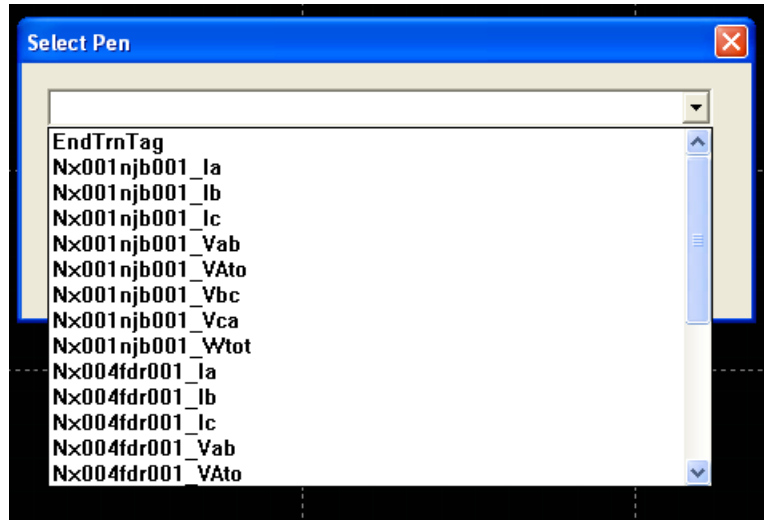
You can also **choose the trending parameters** when in the **HMI EXT Runtime** mode.

NOTE: You must have already **created the link** to the **Trending page** through the **HMI EXT Graphics Builder** screen.

1. In **Runtime** mode, click the button that brings you to a **Trending page**.
2. Click the **Select Pen** icon in the upper, right corner of the screen.



3. The **Select Pen** screen opens. Click the **arrow** and **select** the **parameter** you want to see from the drop-down menu.



4. Click the **Add** button to add the parameter to the **Trending page**. (Click the **Delete** button to delete a parameter; click the **Cancel** button to exit the screen without selecting a parameter.)
5. Repeat the process for up to **8 parameters**.
6. Click the **Back** button and **reselect** the **Trending page** to see your data.

NOTE: The process is the same for the **dTrend page**, except that you can select up to 8 parameters for each of two meters.

4.10: Alarms

Protection of valuable equipment is an important feature of **HMI EXT**. The **Alarm functionality** constantly **monitors** equipment **data** and **alerts** operators of any equipment **fault** or **alarm condition**.

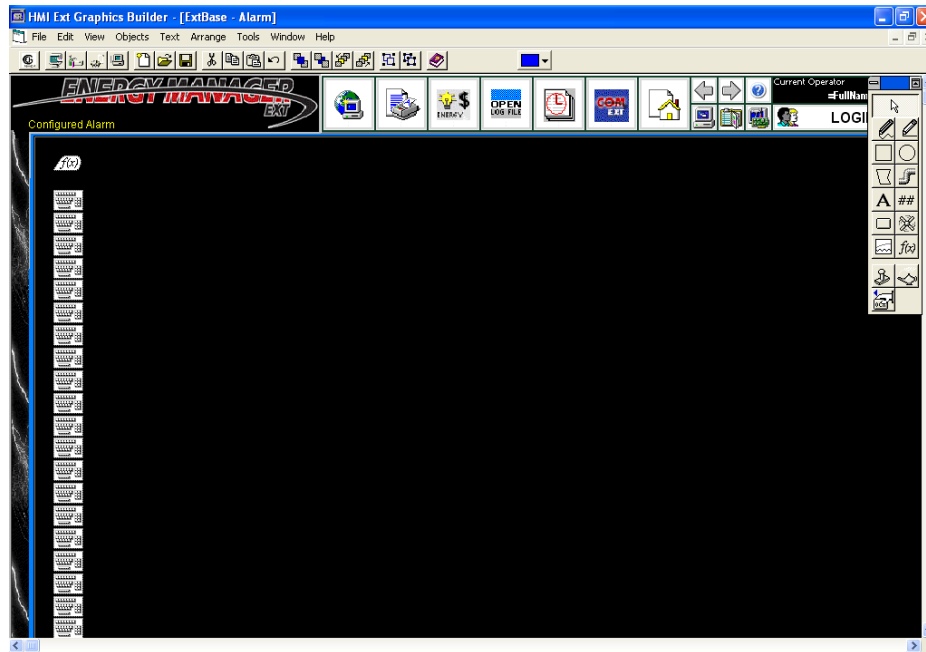
HMI EXT supports **two** types of **alarms**:

- **Hardware alarms:** HMI EXT continually runs diagnostic routines to check all peripheral equipment, such as **I/O Devices**. All faults are reported automatically to the operator. This functionality is **fully integrated** within HMI EXT - no configuration is necessary.
- **Configured alarms:** Unlike hardware alarms, you must configure the alarms that report fault conditions for your project (for example, when voltage drops below a certain level).

4.10.1: Creating Alarm Pages

The **Alarm** page displays all alarms for your project. To create an **Alarm** page:

1. Click the **Alarm** page icon from the **HMI EXT Explorer** screen.
2. The **Alarm** Page template opens in the **Graphics Builder** screen.

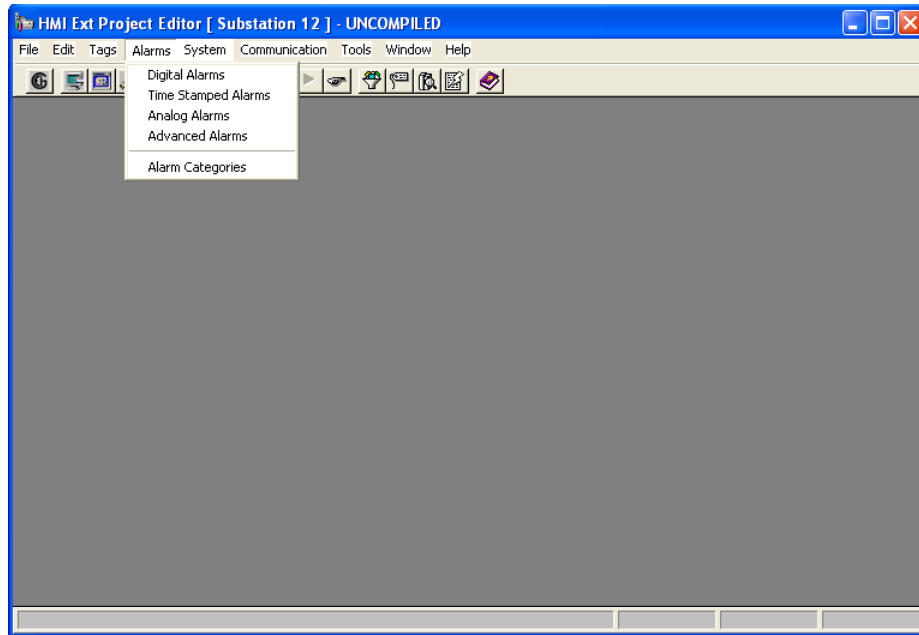


3. Use the **scroll buttons** to view the entire page. Make any changes you wish to selectable areas of the screen and save the page.
4. The **alarms** this page displays are **set up** in the **HMI EXT Project Editor** screen.

4.10.2: Creating Alarms

To create an alarm:

1. Click **Alarms** from the **HMI EXT Project Editor** screen. The **Alarms Menu** displays.



2. You have a choice of **Alarm type**:
 - **Digital Alarms**: triggered by a state change in a digital variable. Use this alarm when a process has only one of two states, e.g., “On” or “Off.”
 - **Time Stamped Alarms**: triggered by a state change in a digital variable, but also has a time component that is saved with the data, so you can tell when an alarm condition occurred.
Note: Since time-stamped alarms require special programming in the I/O Device, you may prefer to use the Digital Alarm.
 - **Analog alarms**: triggered when an analog variable reaches a specified variable.
 - **Advanced Alarms**: triggered when the result of a CiCode expression changes to TRUE.
NOTE: This type of alarm requires complex processing that may slow down your system time.

NOTE: In addition, you can **create** or **modify** an **Alarm Category** from the **Alarms menu** (click **Alarms/Alarm Categories**). Each alarm in your system can be assigned to a category, and each category can be processed as a group. For each category, you can set alarm display details (font and page type), logging details (printer or data file), and the action to be taken when an alarm in the category is triggered (e.g. activating an audible alarm).

Each category can have an associated **priority**. The alarm priorities can be used to **order alarm displays**, providing useful filtering for the operator.

You can configure up to **16376 alarm categories**. If you do not specify a category for an alarm, the alarm has the same attributes as Alarm Category 0. If you do not define an Alarm Category 0, **HMI EXT** uses a default for the category.

3. Select **type of alarm** you want to set. Another screen appears that allows you to set up the **details** for the alarm. (Only the **Digital** and **Analog Alarm** screens are shown here.)

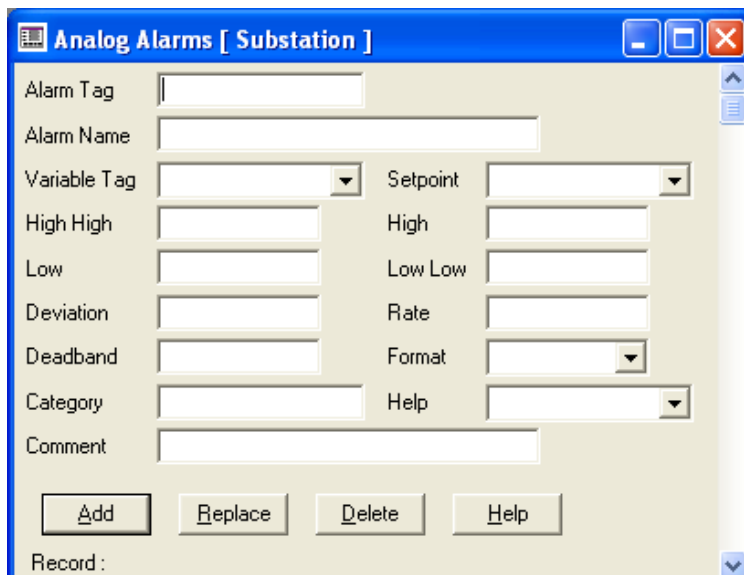
Digital Alarms screen



The screenshot shows the 'Digital Alarms [Substation]' window. It contains the following fields and controls:

- Alarm Tag: Text input field.
- Alarm Name: Text input field.
- Alarm Desc: Text input field.
- Var Tag A: Dropdown menu.
- Var Tag B: Dropdown menu.
- Category: Text input field.
- Help: Text input field.
- Comment: Text input field.
- Buttons: Add, Replace, Delete, Help.
- Record: Label at the bottom left.

Analog Alarms screen



The screenshot shows the 'Analog Alarms [Substation]' window. It contains the following fields and controls:

- Alarm Tag: Text input field.
- Alarm Name: Text input field.
- Variable Tag: Dropdown menu.
- Setpoint: Dropdown menu.
- High High: Text input field.
- High: Text input field.
- Low: Text input field.
- Low Low: Text input field.
- Deviation: Text input field.
- Rate: Text input field.
- Deadband: Text input field.
- Format: Dropdown menu.
- Category: Text input field.
- Help: Text input field.
- Comment: Text input field.
- Buttons: Add, Replace, Delete, Help.
- Record: Label at the bottom left.

4. **Enter:**

- **Alarm Tag:** name of the alarm.
- **Alarm Name:** name of the physical device the alarm is for.
- **Var Tag A/Var Tag B/Variable Tag:** tags associated with your alarm.
- **Setpoint:** value that determines if a deviation point is triggered.
- **High High/High/Low/Low Low:** values that trigger alarms.
- **Deviation:** range for Deviation Alarm.
- **Rate:** used to trigger a maximum rate alarm condition.
- **Deadband:** value used to determine when a Deviation Alarm becomes inactive.
- **Format:** display format of the variable.
- **Category/Help/Comment:** optional

5. Click **Add** to add the alarm. (Click **Replace** to replace an existing alarm; click **Delete** to delete an existing alarm; click **Help** for context-sensitive Help.)

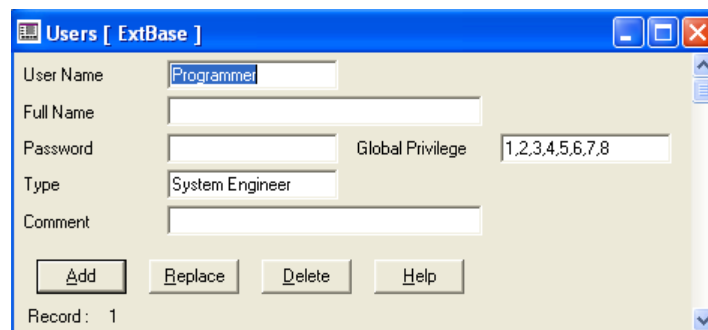
4.11: Security

HMI EXT allows you to build **security** into your project, by which you can **restrict access** to **commands** that should not be available to all your operators; for example, commands that operate meters, acknowledge critical alarms, or print billing reports. You can assign a **separate password** to each of your operators (or class of operators), which must be entered before the operator can use the system. To do so, you must set up your operators with certain privilege levels, and assign corresponding privilege levels to functions and devices.

4.11.1: Setting Up a User Profile

To **set up a user profile** in the **HMI EXT** database:

1. Select **System/Users** from the **Project Editor** screen. The **Users** screen opens.



The screenshot shows a window titled "Users [ExtBase]". Inside, there are several input fields: "User Name" with the text "Programmer", "Full Name" (empty), "Password" (empty), "Global Privilege" with the text "1,2,3,4,5,6,7,8", "Type" with the text "System Engineer", and "Comment" (empty). Below these fields are four buttons: "Add", "Replace", "Delete", and "Help". At the very bottom, it says "Record: 1".

2. **Enter:**

- **User Name:** the ID this operator will need to enter to access the system.
- **Full Name:** the name of the operator or class of operators.

- **Password:** the password that this operator will need to enter to access the system.
- **Global Privilege:** the privilege level(s) of this operator or class of operators. Privileges levels are from 1 to 8. See **NOTE** below.
- **Type:** the generic type of the user (e.g., manager).
- **Comment:** this field is optional.

NOTE: HMI EXT privileges are non-hierarchical, by default. That means that if you give a user a privilege level of **3**, the user is able to perform functions set up for **level 3, only**. To enable the same user to perform functions set up for level 2, you need to enter privilege level 2 for the user, as well as level 3.

You can **program HMI EXT** to use **hierarchical privileges**, which means that a privilege level would enable the user to perform functions of **that and any lower** levels. For example, if you give a user a privilege level of 3, they would also be able to perform functions assigned to privilege levels 1 and 2.

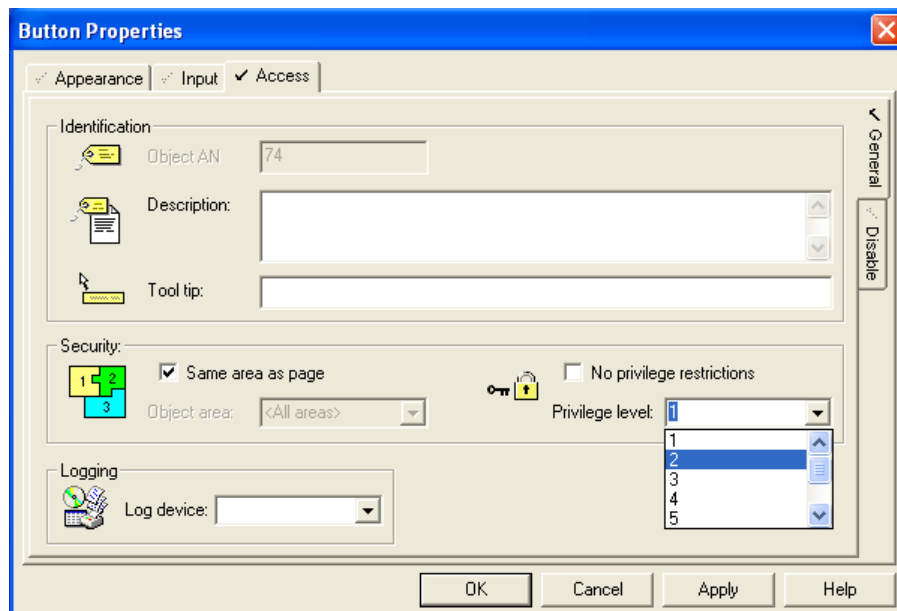
The **HMI EXT Help Topics screen** contains instructions on changing privileges from non-hierarchical to hierarchical.

3. Click **Add** to add the user profile. (Click Replace to replace an existing user's profile; click Delete to delete an existing user's profile; click Help for context-sensitive Help.)

4.11.2: Setting Up Privileges

To set up privileges for functions/devices:

1. From the **EXT Graphics Builder** screen, **double click** the **object** whose access you want to restrict. The **Properties** screen opens for that object.
2. Click the **Access** tab. In the **Securities** section, there is a **checkbox** next to "**No Privilege Restrictions.**" If this box is checked, click on it to un-select it.



3. Select the **privilege level** for the function (in this example, it is a button) or device, by **clicking** on the **arrow** in the **Privilege Level** field and selecting the level you want from the pull-down menu.
4. To **remove any restriction** from the function or device, **click** the **check box** next to “**No Privilege Restrictions.**”
5. Click **OK** to save the privilege selection. (Click Cancel to exit the screen without making any changes; click Apply to apply your selection and leave the screen open for other selections; click Help for context-sensitive Help.)

4.12: Protecting the Default Values for HMI EXT

As mentioned earlier in this chapter, the **ExtBase file** contains **data** that allows it to work with your **EIG meters**. That is why ExtBase is used to create new projects. There are things you can change when creating your project, but you must **keep** certain **default values** in order for HMI EXT to work properly. If these values are changed, you will encounter errors. Following are a list of **default values** for **HMI EXT**.

1. Server: “**IOSERVER**”
2. Board: “**SERIAL**” or “**ETHERNET**”
3. Port:
 - If using Com1, select “**PORT1_SER**” as your Port name and “**1**” as your Port number.
 - If using Com 3, select “**PORT3_SER**” as your Port name and “**3**” as your Port number.
 - If using Ethernet, select “**PORT101_TCP**” as your Port name, select “**101**” as your Port Number, and enter the device’s **Ethernet Address**. If using additional Ethernet devices, increase the Port name and number by 1 and enter a unique IP address for each meter; for example: PORT102_TCP, port address 102.
4. For Device Name, use the following format:

“Nx001MAIN01”

 - Nx- Nexus™ meter (Use Sh for Shark® meters, Dm for DMMS)
 - 001 – Modbus address of the meter (1-247)
 - MAIN01 – any description consisting of 6 characters

5. For variable tags:

- “Nx001MAIN01_Vab” for calculated values
- “NX001MAIN01_Vab_x” for raw data from the meter

The format of the variable tag is:

- Nx001MAIN01 – device name
- _Vab – EIG parameter. The standard parameters are _Vab, _Vbc, _Vca, _Ia, _Ib, _Ic, _Wt, _VAt, _PFt, _Hz

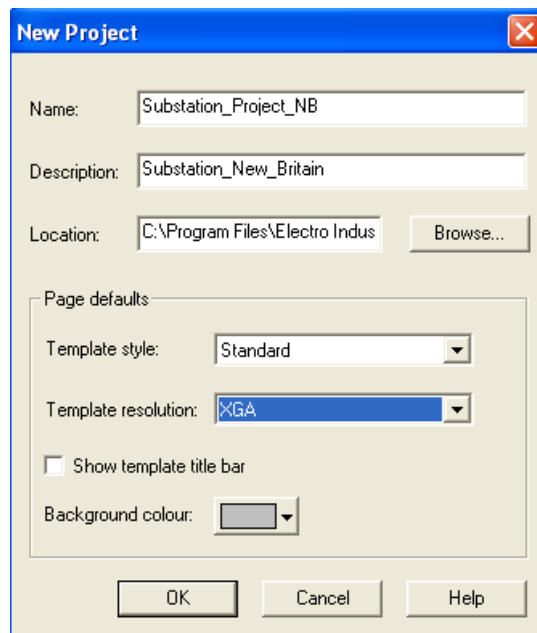
6. For Trend Tags, use the same format as for calculated Variable tags:

“Nx001MAIN01_Vab”

4.13: Creating a New Project Without Using ExtBase

The following instructions provide an alternate way of creating a new project.

1. From the **HMI EXT Explorer** screen, select File>New Project. You will see the screen shown below.



2. Perform the following steps:
 - a. Enter the **Name** of your project.
 - b. Enter the **Description** of your project.
 - c. Enter the **Location** for your project files. (Click **Browse** to search for a directory on your computer.)
 - d. **Template style:** leave as “Standard.”
 - e. **Template Resolution:** select “XGA.”
 - f. **Uncheck** the Show template title bar box.
 - g. Select **Background Color** from the pull-down menu.

3. Click **OK**. The **HMI EXT Explorer** screen is redisplayed, with your new project highlighted in the Project list.
4. Go to the **HMI EXT Project Editor** screen and select **Communication>Express Wizard**. You will see the screen shown below, which allows you to add EIG devices.

EIG Communication Wizard Version 1.1.1

Current Project:

Substation_Project_NB

Select the I/O Server from your existing I/O Server or create a new I/O Server by entering the desired name

Use I/O Server

Enter the desired name for the new I/O Device or select an existing I/O Device

Type	Address	Name
<input type="text"/>	<input type="text"/>	<input type="text"/>

Select the corresponding Device Template

< Back Next > Cancel

5. Select the:
 - Device **Type**
 - Device **Address**
 - Device **Name**
 - **Device Template**.

See the example screen, shown below.

EIG Communication Wizard Version 1.1.1

Current Project:

Substation_Project_NB

Select the I/O Server from your existing I/O Server or create a new I/O Server by entering the desired name

Use I/O Server

Enter the desired name for the new I/O Device or select an existing I/O Device

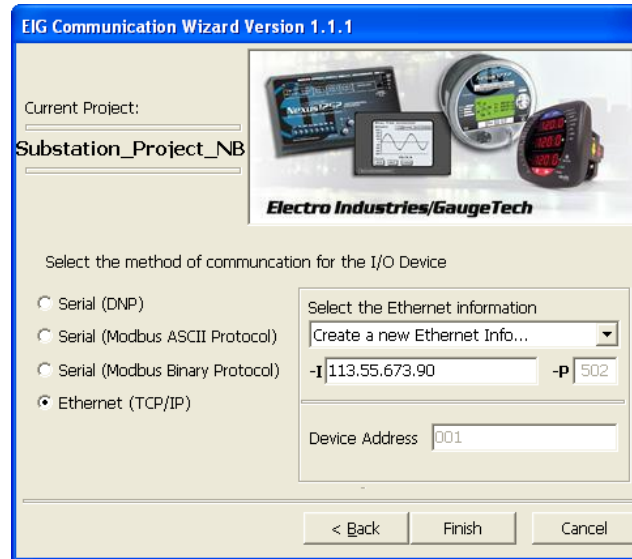
Type	Address	Name
SHARK	1	SUBMET

Select the corresponding Device Template

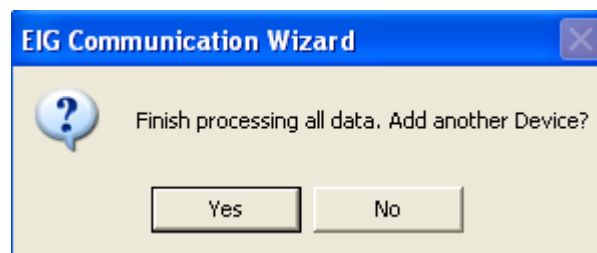
☒ Shark_Std

< Back Next > Cancel

6. Click **Next**. You will a screen prompting you for communication settings for the device.
7. Enter the Serial or Ethernet information for the device. See the example screen, shown below.

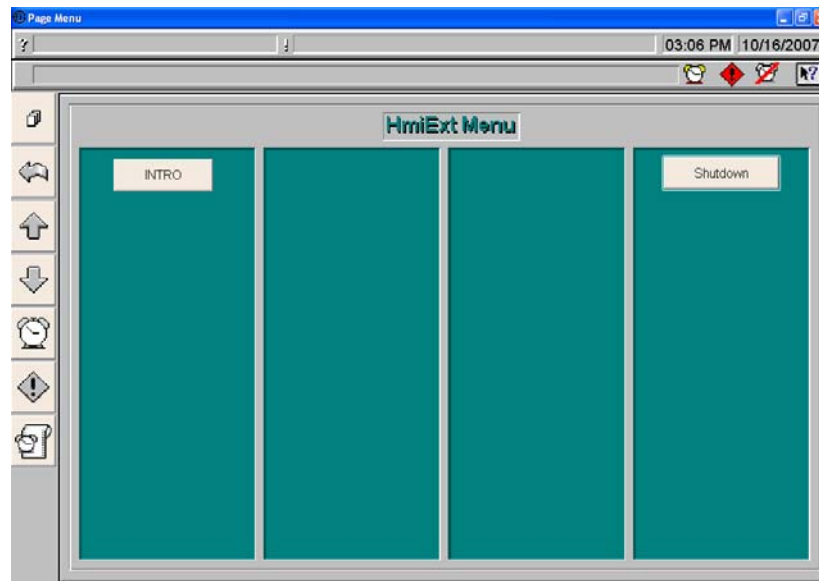


8. Click **Finish**.
9. You will see message screens telling you that Variable and Trend records have been added for the device. Click **OK** to close each message window.
10. Next, you will see the screen shown below.



11. Click **Yes** to add another device through the Communication Wizard; click **No** if you are finished adding devices.
12. From the **HMI EXT Project Editor** screen, select:
 - a. **File>Pack**
 - b. **File>Compile**
 - c. **File>Run**

13. HMI EXT will start the project; you will see the screen shown on the next page.
NOTE: You will only see this page the first time you start the new project. After that, you will see the **Intro** page, shown in the next step.



14. Click the **INTRO** button. You will see the default **Intro** page for your project.

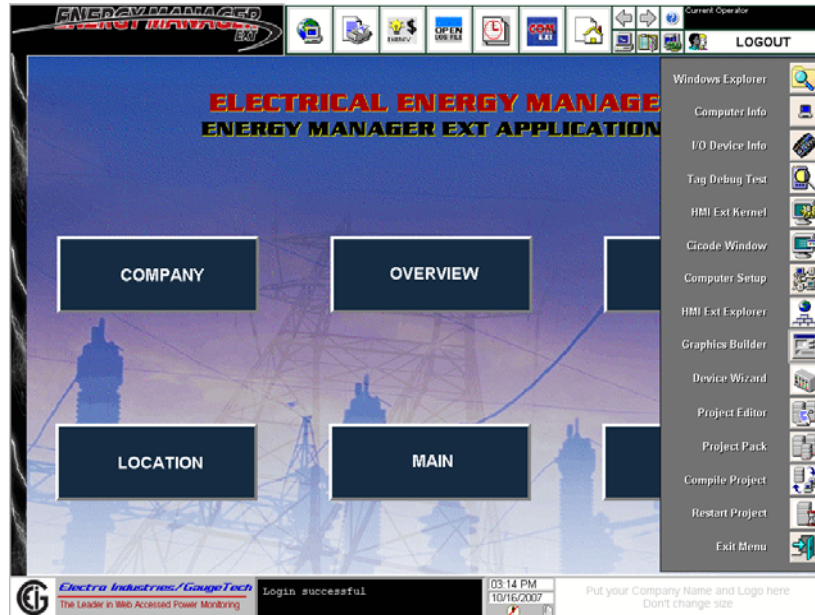


15. Click **LOGIN>ADMINISTRATOR LOGIN**. The following is the default login:
c. **Name:** HmiExtAdmin
d. **Password:** 13572468
16. The **Intro** page will now display the message “Login successful” at the bottom of the screen.

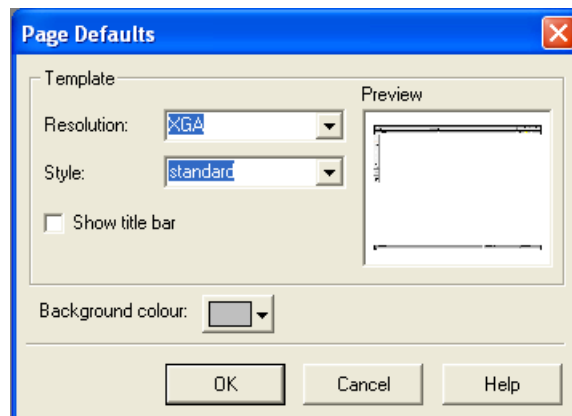
17. Click the **Display Utility Popup** icon to see the menu shown on the next page.



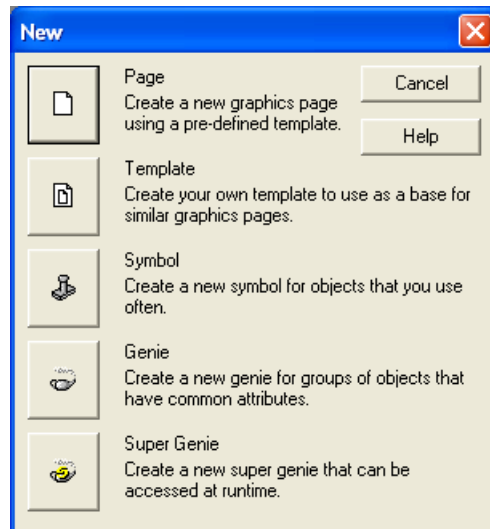
Display Utility Popup Icon



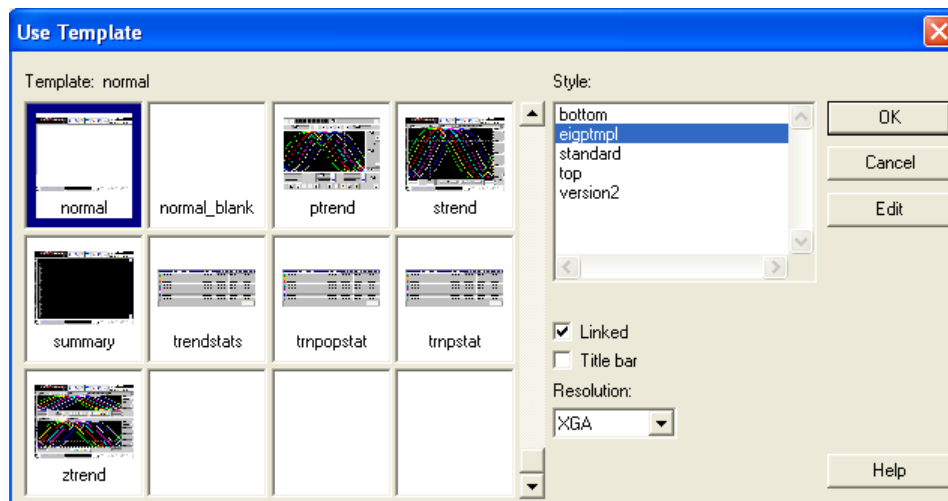
18. Click **Graphics Builder**. You will see the **HMI EXT Graphics Builder** screen.
19. From the **Graphics Builder** screen, select **File>Defaults** to set the EIG template as your default. You will see the window shown below.



20. From the **Style** pull-down menu, select **eigtmpl**.
21. Click **OK**. Now any page you create will follow the EIG template.
22. To add a new page for your project, from the **Graphics Builder** screen, select **File>New**. You will see the window shown on the next page.



23. Click **Page**. The **Use Template** window opens, showing the available pages for **eigtmpl**.



24. Select the type of page you want to use and click **OK**. Refer to earlier sections, 4.7-4.11.2 for instructions on creating pages and other features for your project.

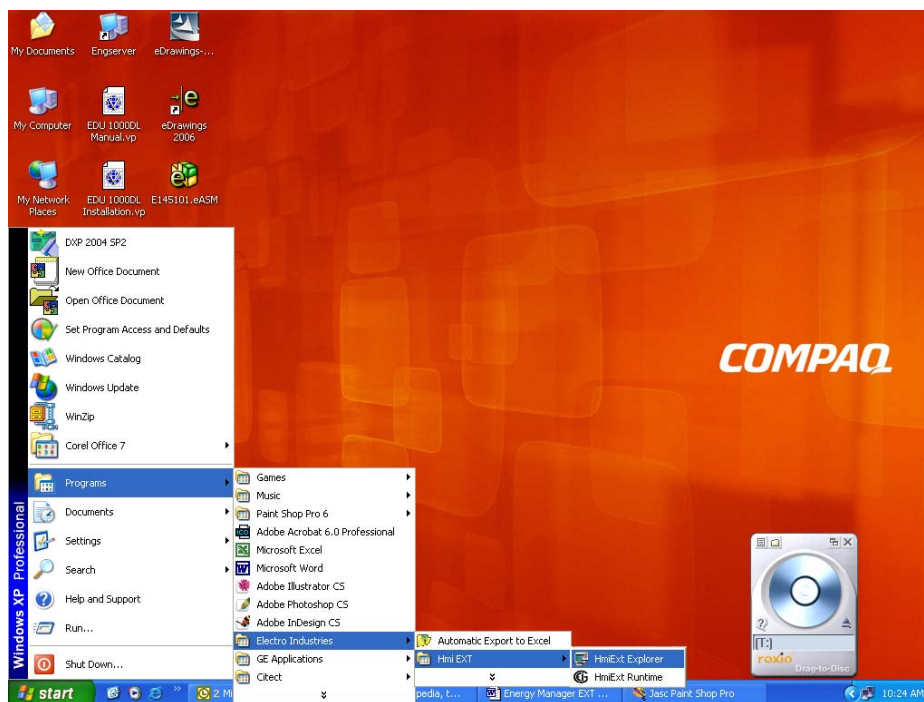
Chapter 5

Running an HMI EXT Project

5.1: Entering Runtime Mode

Use the **Runtime** mode of **HMI EXT** to **run** your **project**. You can **access Runtime** in either of **two** ways:

- From the **Start Menu**, select **Programs-Electro Industries-HMI EXT-Runtime**.



- From **HMI EXT Explorer** mode, click the **Run** icon in the **Title Bar** of any of the screens.



Run icon

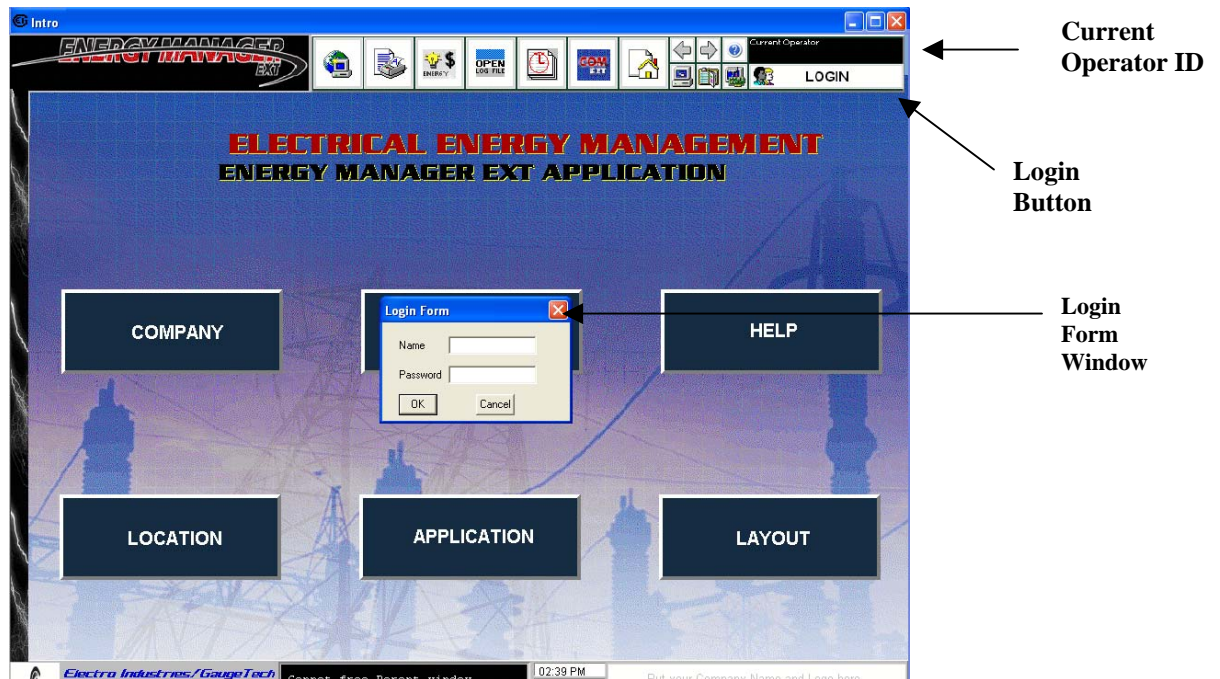
NOTE: You can also run the project by clicking **File/Run** or by pressing **F5** from any of the screens.

Energy Manager EXT opens with the **Intro** page of your project.

5.1.1: Logging In

If your project has been set up with **password control**, you need to log in before you can work with it.

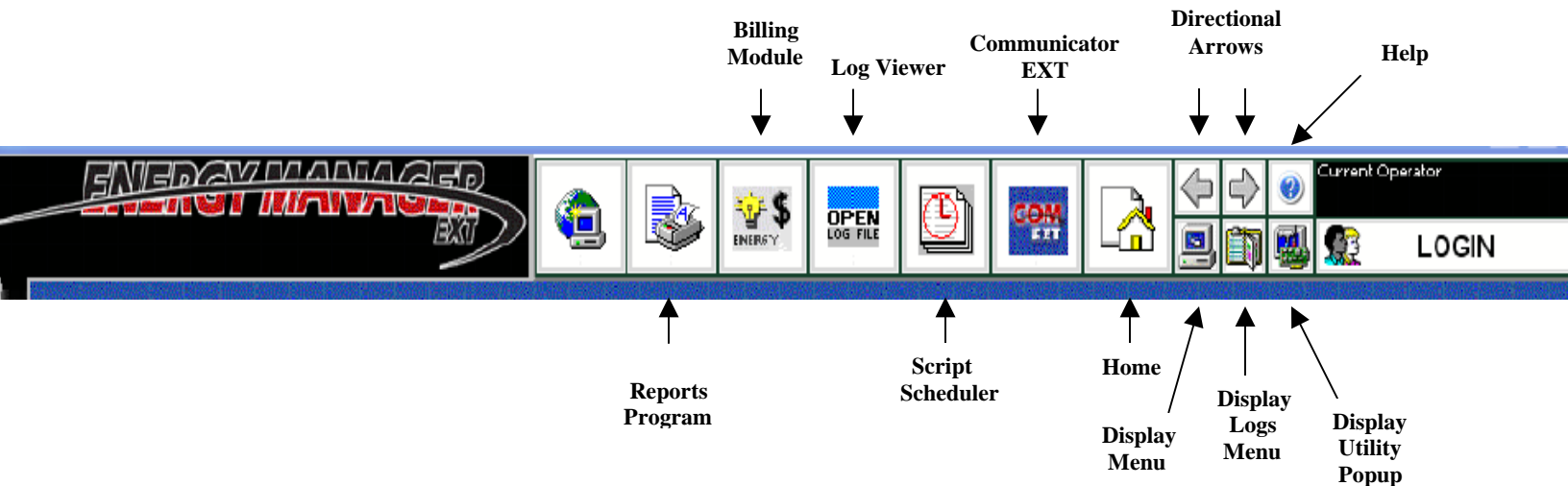
1. Click **LOGIN** in the upper right corner of the screen. The Login Form window opens.



2. **Enter:**
 - **Name** (HmiExtAdmin is the default name.)
 - **Password** (13572468 is the default password.)
3. Click the **OK** button. Your identification appears in the Current Operator field at the top right of the screen.

5.2: Navigating to Other Project Screens and Help Files

Click the **buttons** in the center of the **Intro** page to access other **project** screens. The **Title Bar** also has buttons and icons that allow you to **navigate** to other project screens and to other programs in **Energy Manager EXT**.



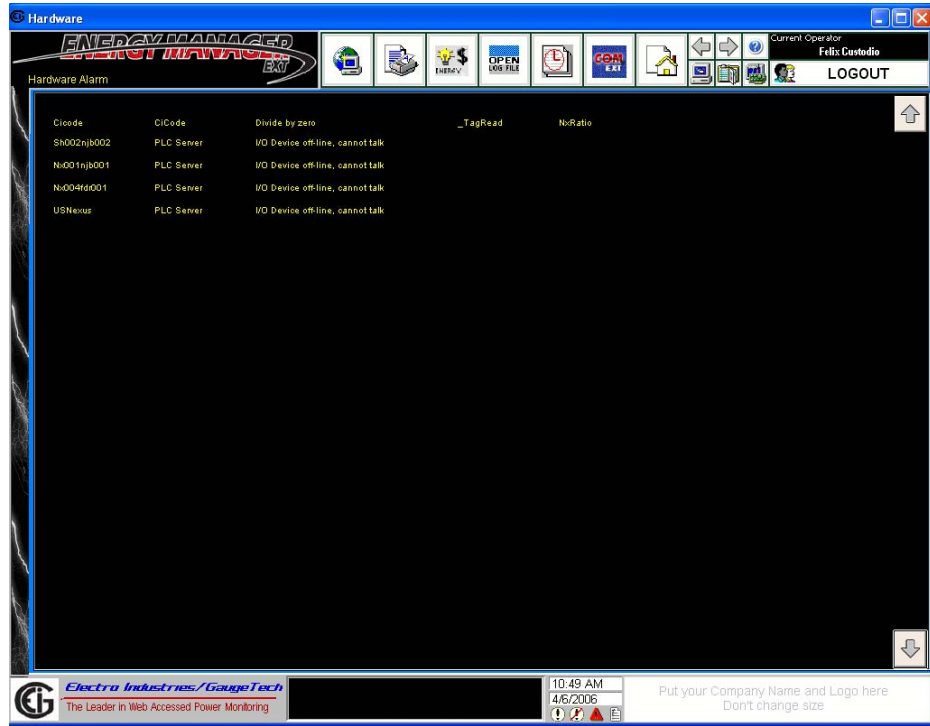
- The **directional arrows** allow you to scroll backward and forward through project screens.
- The **Question Mark** icon opens a Help page.
- The **Display Utility Popup** opens a menu with links to tasks for your project. Click **Exit Menu** to close the menu
- The **Display Logs Menu** icon opens a list of log pages. Click a menu item to go to that log page. Click **Exit** to close the menu.
- The **Display Menu** opens a list of pages for your project. Click on an item to go to that page. Click **Exit** to close the menu.
- The **Home** icon returns you to your project's Intro page.

5.3: Viewing Alarms

If **Alarms** have been **enabled** for your project, the **Alarm icon** at the bottom of the Intro screen flashes from yellow to red whenever there are alarms to view.



To **view alarms**, click on the **Alarm icon**. The **Alarms screen** opens, showing any alarm conditions. Any new alarms are bright yellow. Once viewed, the alarms fade to a lighter yellow.

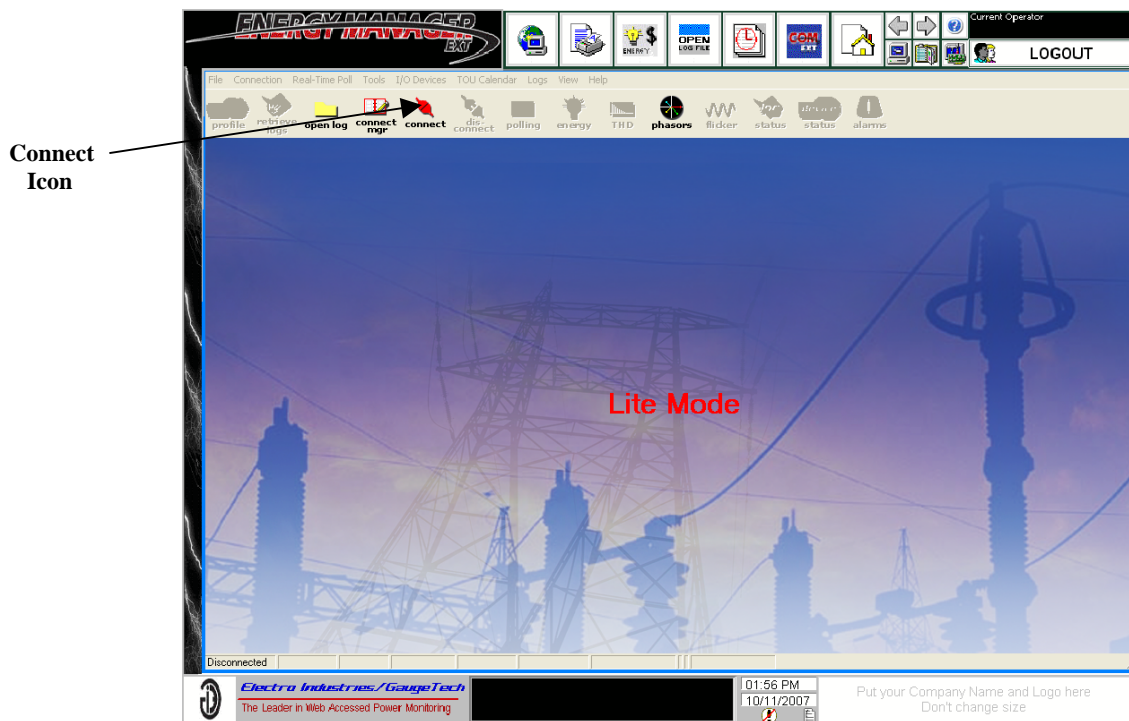


5.4: Launching Communicator EXT

Click the **Communicator EXT** icon on the **Title Bar** of any project screen to launch the **Communicator EXT** program.



**Communicator EXT
Icon**



Communicator EXT allows you to **configure, poll, view graphic readings, and create log databases** for your meters.

1. Click the **Connect** icon to connect to your project meters. The **Connect** screen opens, with the address and port number of your meter.

2. Click the **Connect** button to connect to your meter.

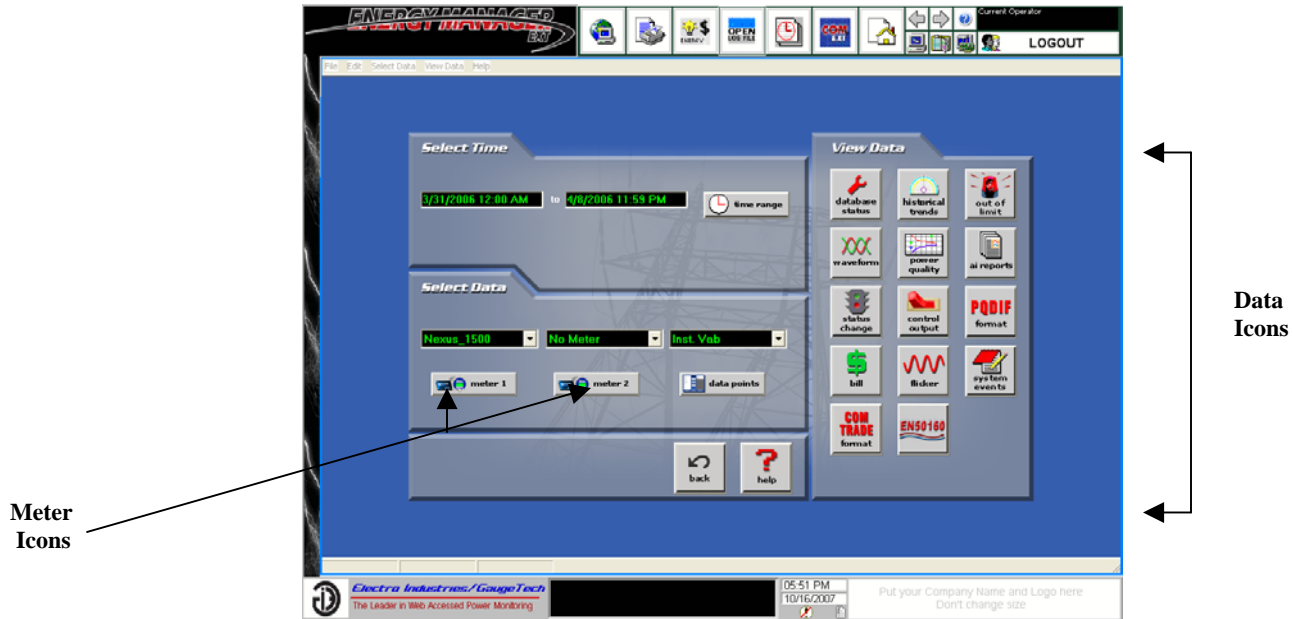
See the *Communicator EXT 3.0 User's Manual* for detailed information on using all of the features of the Communicator EXT software.

5.5: Launching Log Viewer

1. Click the **Log Viewer** icon on the **Title Bar** to open EIG's **Log Viewer**.



Log Viewer
Icon



The **Log Viewer** lets you see historical log data for your meters.

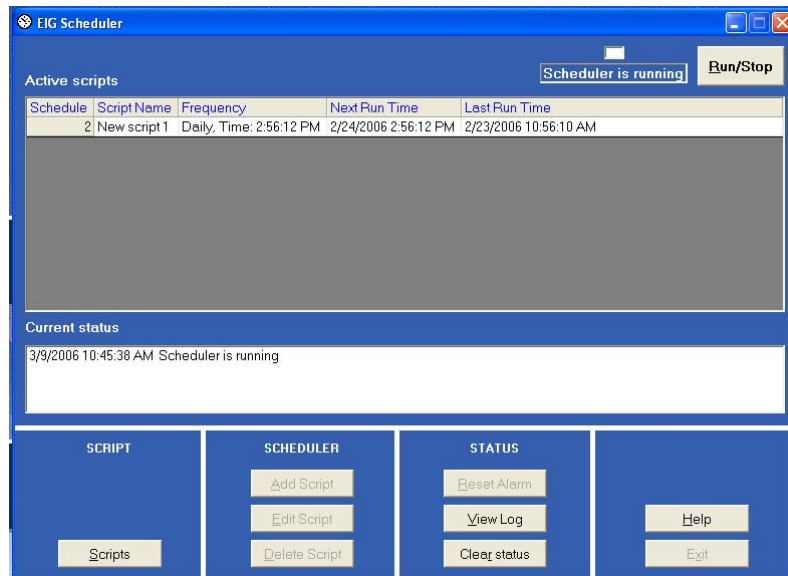
2. Click:
 - a. One of the **Meter icons** to select the database you want to view
 - b. One of the **Data icons** to view the data in the specified format, **e.g.**, click the **Out of Limits** icon to see any out of limit conditions in your historical log. See the *Communicator EXT 3.0 User's Manual* for detailed information on the **Log Viewer**.

5.6: Launching Script Scheduler

Click the **Script Scheduler** icon on the **Title Bar** to open EIG's **Script Scheduler**.



**Script Scheduler
Icon**



The **Script Scheduler** allows you to **start**, **stop**, and **view** the **status** of **scripts** you have set up through Communicator EXT. See the *Communicator EXT 3.0 User's Manual* for detailed information on **Script Scheduler**.

5.7: Launching Billing Module

1. Click the **Billing Module** icon on the **Title Bar** to open the **Billing Module**.

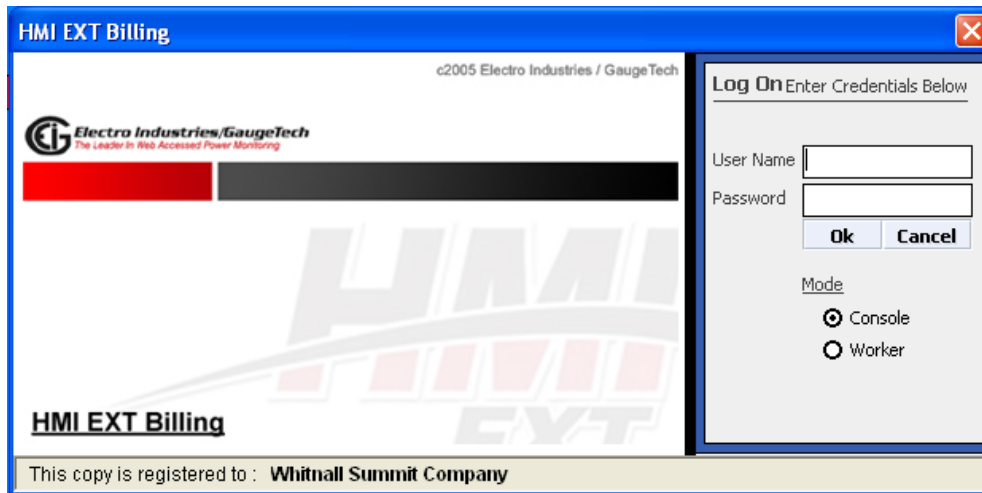
NOTES:

- The **EIG Billing Module** must be installed on your computer for this option to work.
- Refer to the *HMI EXT Billing User Manual* for additional instructions.

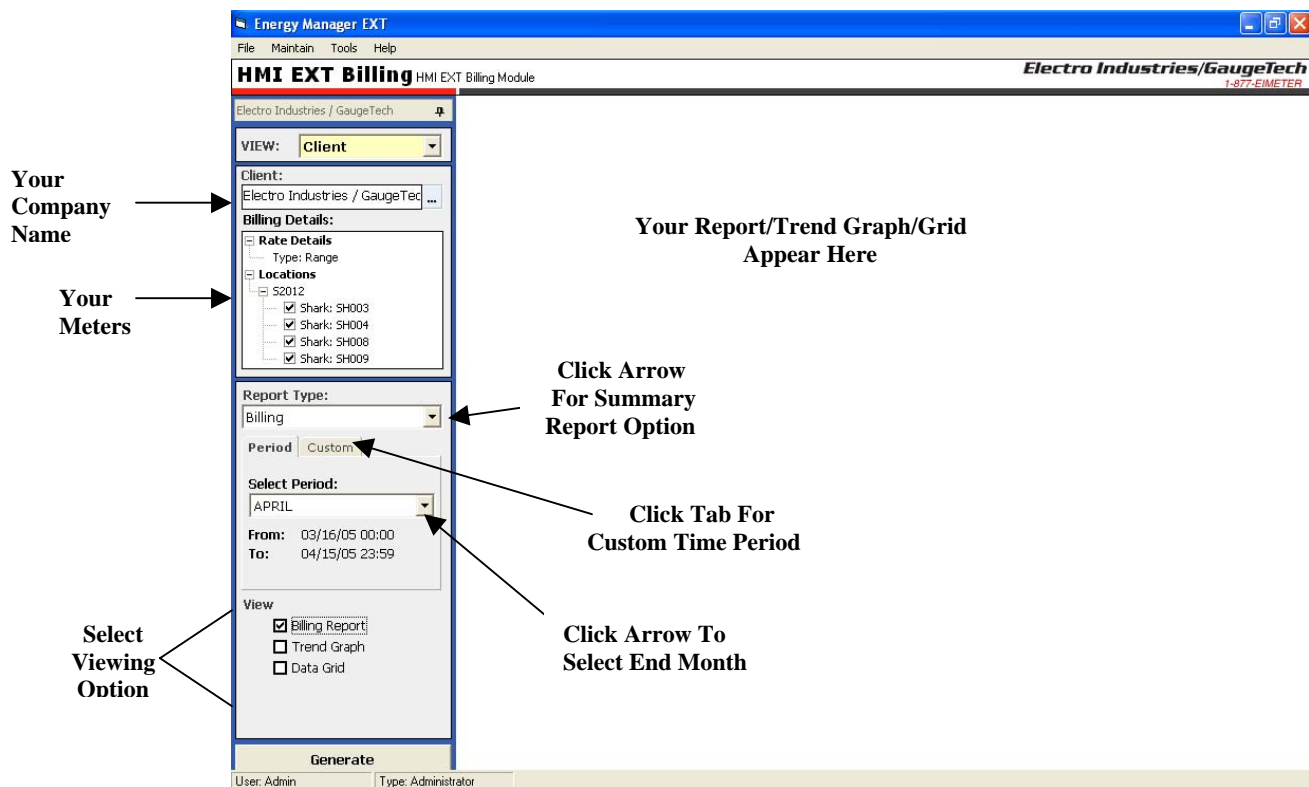


**Billing Module
Icon**

The **HMI EXT Billing Logon** screen opens.



2. Enter your **User Name** and **Password** and press the **OK** button. The **HMI EXT Billing** screen opens.



- Your **company name** appears in the **Client** field.
- Your **meters** are listed in the **Billing Details** box. Uncheck any meters you do not want on the **Billing Report**.

3. **Select:**
 - **Report Type** (Billing or Summary)
 - **Period:** (A one year period, ending with the month selected: Period tab and select month from drop down list) or Custom (Custom tab and enter date and time range)
 - **Type of Report** (Billing Report, Trend Graph, or Data Grid)
4. Click the **Generate** button to process your selection. The Billing report/trend graph/or data grid appears on the right side of the screen. Click the **Printer** icon to print the report.

Example: Summary Report

Click to Print Report

Electro Industries Report Summary Date: April 07, 2006

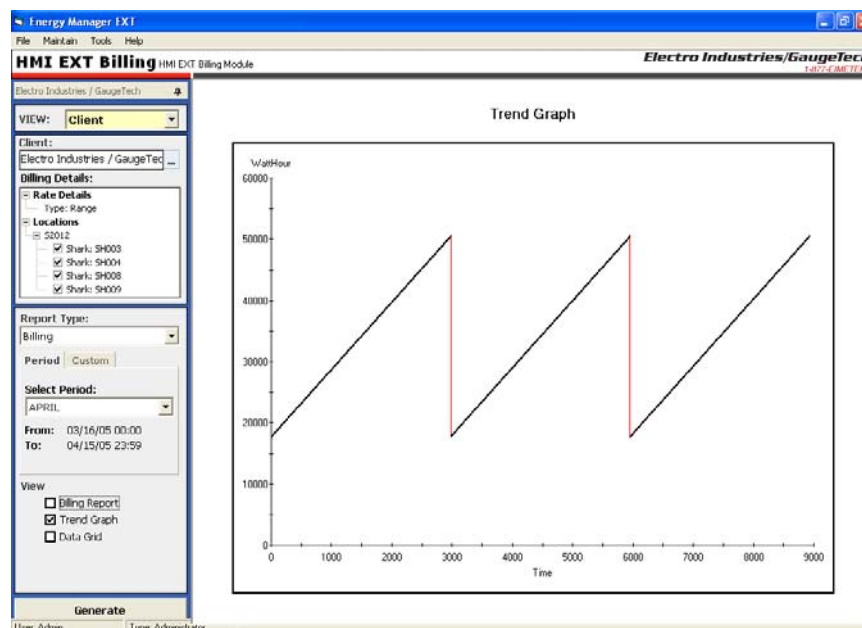
1800 Shames Drive
Westbury, New York
United States of America

Company :
Location : S2010

Billing Period	Year	Billing Date	Demand (kW)	Energy (kWh)	Cost
APRIL	2006	4/7/2006 11:08:10 AM	0.00	0.00	\$ 1,449,115.00
MARCH	2006	4/7/2006 11:10:28 AM	0.00	0.00	\$ 51.76

Generate
User: Admin | Type: Administrator

Example: Trend Graph



5.8: Launching the HMI EXT Report Program

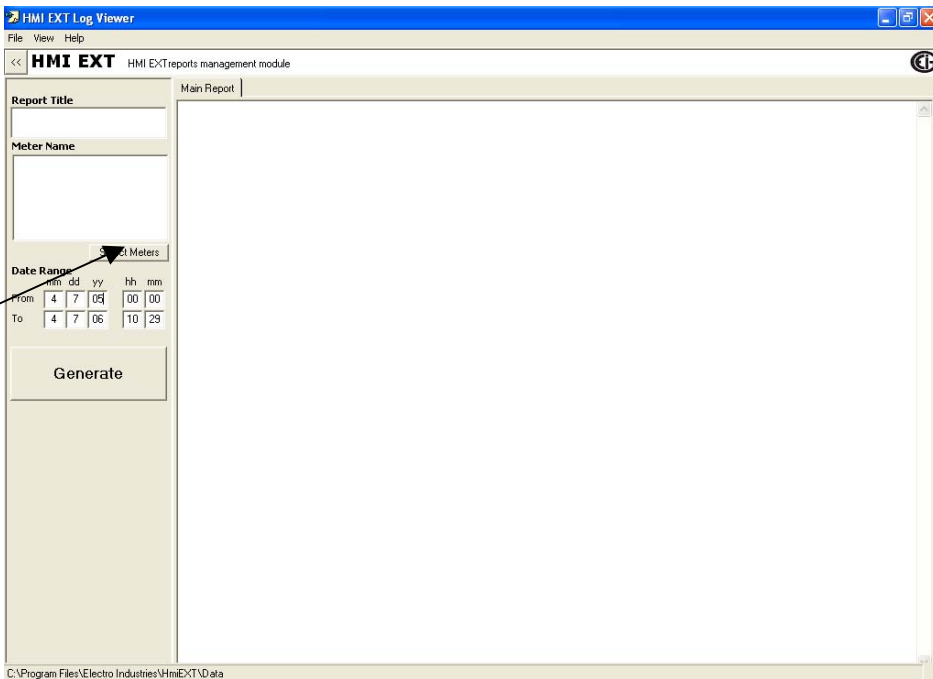
HMI EXT has a **Report Program** that you launch by clicking on its **icon** in the **Title Bar**.



**Report Program
Icon**

The **Report Program** screen opens, allowing you to set the parameters for your report.

Click to Select Meters For Report

The screenshot shows a window titled "HMI EXT Log Viewer" with a menu bar (File, View, Help). Below the menu bar is a tab labeled "HMI EXT" and a subtitle "HMI EXT reports management module". The main area is divided into two panes. The left pane contains a "Report Title" field, a "Meter Name" field, a "Select Meters" button, and a "Date Range" section with "From" and "To" date pickers. The "From" date is 4/7/05 00:00 and the "To" date is 4/7/06 10:29. Below these is a "Generate" button. The right pane is titled "Main Report" and is currently empty. The status bar at the bottom shows the file path "C:\Program Files\Electro Industries\HmiEXT\Data".

Date Range				
mm	dd	yy	hh	mm
4	7	05	00	00
4	7	06	10	29

1. Enter:

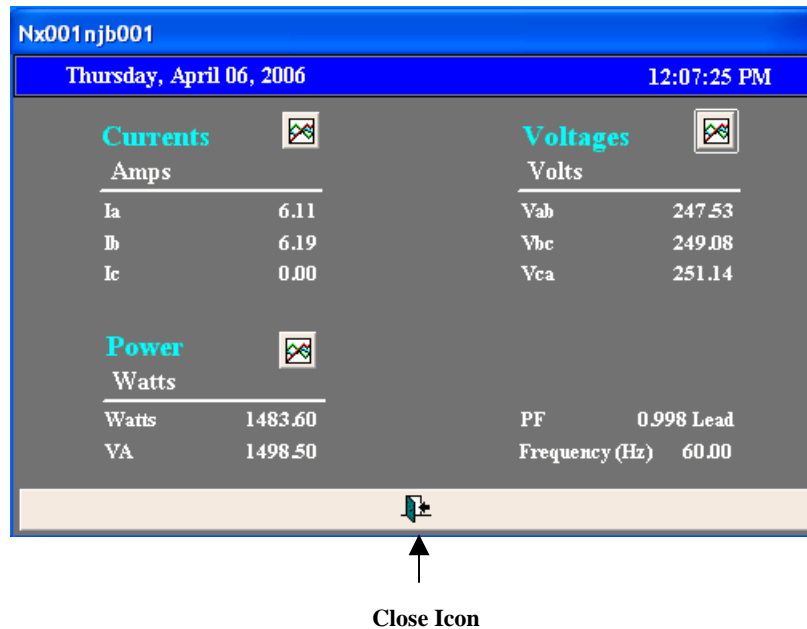
- **Report Title**
- **Meters** (Click Select Meters and add to list)
- **Date Range**

2. Click the **Generate Button** to create your report.

5.9: Viewing Meter Readings through HMI EXT

In addition to connecting to Communicator EXT, you can view **meter readings** through **HMI EXT** in the following **two ways**.

1. Click the **graphic** of a **meter** to open the **real-time readings** for that meter. Click the **Close** icon to close the screen.



2. Click one of the **Polling Bar** icons next to a meter to open the related **Communicator EXT** screen within **HMI EXT**.



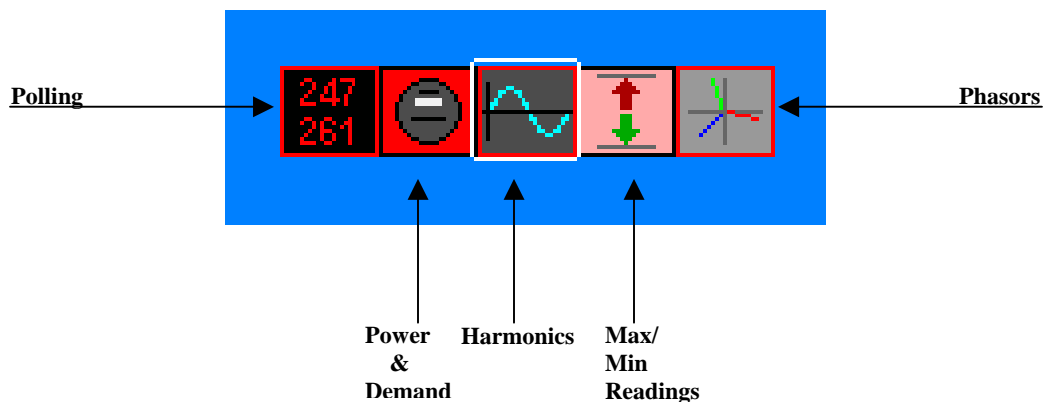
Shark® Meter Polling Bar



Nexus™ Meter Polling Bar



DMMS Polling Bar



Example:

Voltage and Current
Selected for Shark® Meter



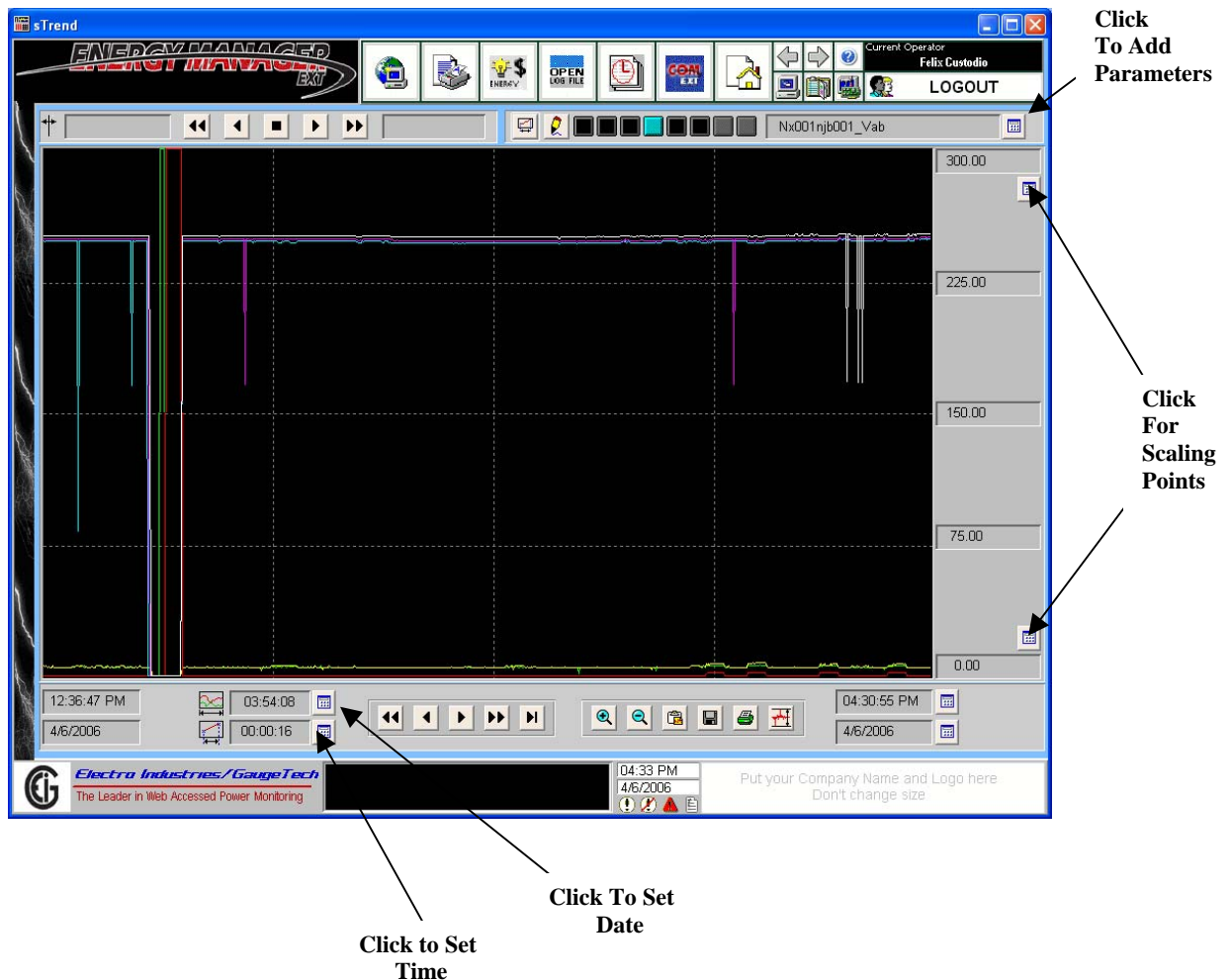
Communicator EXT
Voltage and Current Screen
For the Shark® Meter

5.10: Viewing Trending Data through HMI EXT

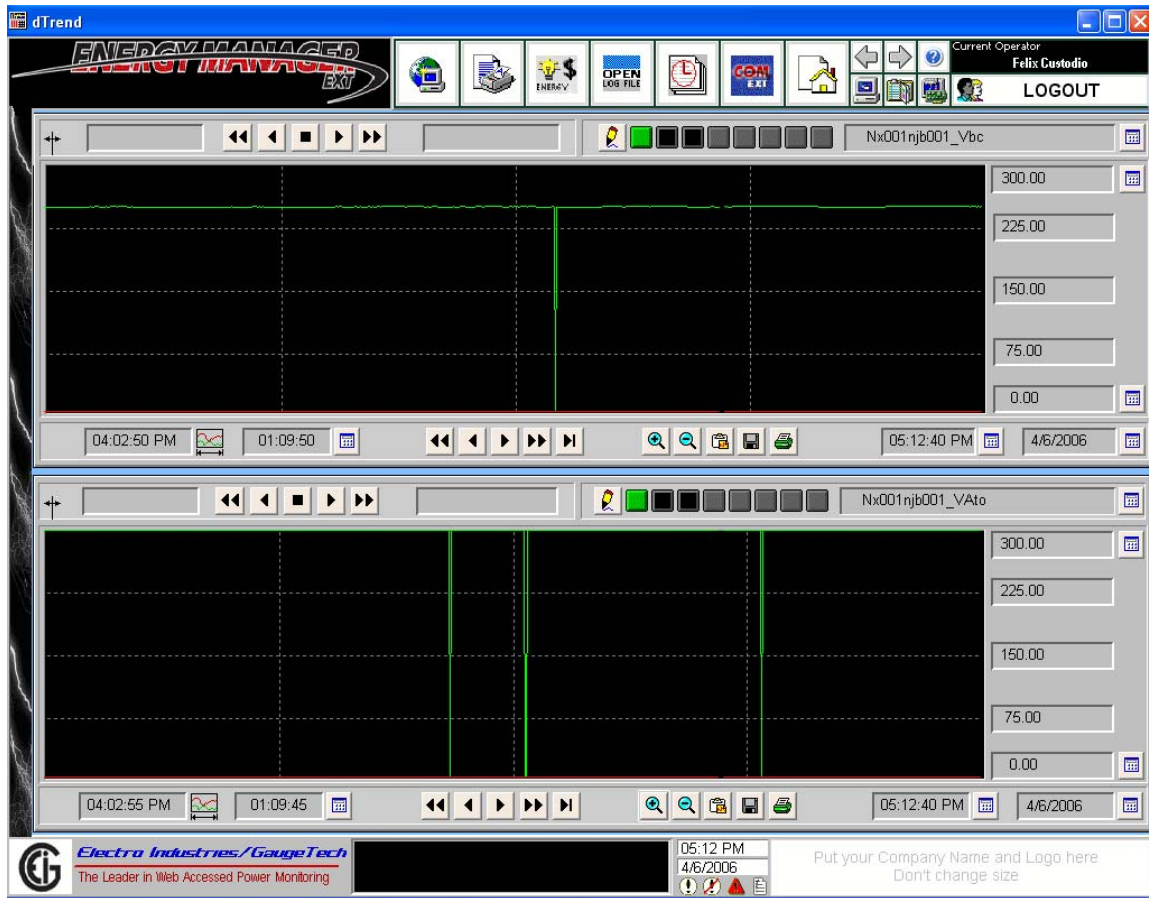
To view **Trending** from **HMI EXT**:

- Access the **Log Viewer** and click the **Historical Trends** icon (see Section 5.5).
- Open an **HMI EXT Trending page**. You access a **Trending page** by clicking a button on either the **Intro** or **Main HMI EXT** project pages. Both **Single Trend** pages (displaying one meter's data) and **Double Trend** pages (displaying two meter's data) are available in **HMI EXT**.

Single
Trend
Page



**Double
Trend
Page**



The **selection icons** are the same as for the **Single Trend** page on the previous page. The only difference with this screen is that you can select parameters for two meters.

NOTE: The **Trending pages** you see may have already been programmed to show parameters for the meters.

Chapter 6

Connecting to HMI EXT through an Internet Server

6.1: Introduction

During an HMI EXT Project's **Computer Setup** you had the option of configuring the computer as an Internet Server (see Chapter 4). This allows other computers to access the project stored on the computer. These **Client computer(s)** use the IP Address or Hostname you entered during Computer Setup to connect to the server-computer through the Internet.

This chapter explains how to set up a Client computer. It also contains additional instructions for configuring the Internet Server.

6.2: Setting up a Client Computer

1. From the Client computer, open **Internet Explorer** and type the following in the address line: **ftp://ip address of HMI Server/IDC.EXE**
For example: ftp://172.20.88.47/IDC.EXE
2. Download **IDC.EXE** (the **Internet Display Client** application). The AutoInstall Wizard will guide you through installing IDC on the computer.
3. After installation, verify that the following parameters are in the Citect.ini file, which is located in the **bin** directory of **HmiExt IDC**. Parameters marked with an asterisk * must be manually entered into this file.

```
[lan]
node=HMITEST
disable=0
TCPIP=1
NetBIOS=0

[INTERNET]
Server=0
Client=1
IP Address=server ip address
Password=* (default password is disppword)
Restart=0
Update Time=1*
Refresh=1*

[Page]
DynamicSizing=1
```

ScanTime=1000

Startup=Intro

[Animator]

FullScreen=0

[Internet Servers]

Server0=*server ip address*

Server1=

Server2=

Server3=

Server4=

Server5=

Server6=

Server7=

Server8=

Server9=

[Client]

Primary=*client name*

Display=1

[DNS]

Primary= *server ip address*

Standby=

IOServer= *server ip address*

Alarm= *server ip address*

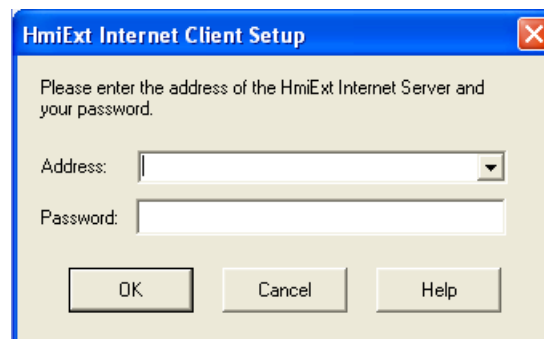
Trend= *server ip address*

Report= *server ip address*

[GENERAL]

MSCryptSlowStartupFix=1

6. Run the IDC program by selecting:
Start>Programs>Electro Industries>HMI EXT>IDC Runtime.
7. You will see the **HMI Internet Client Setup** screen.



Enter:

- The **IP Address** of the Internet server.
- The **Password** for the Internet server.

8. Click the **OK** button to connect to the Internet server and access the HMI EXT project from the Client computer. See Chapter 5 for instructions on running the HMI EXT project.

6.3: Verifying Internet Server Parameters

After you have finished Computer Setup on the computer that is the Internet Server, verify that the following parameters are in the Citect.ini file, located in C:\WINDOWS. **IMPORTANT!** The fields marked with an asterisk must be **manually entered** into the Citect.ini file.

[LAN]

node=*name assigned to computer during setup*

disable=0

LanA=-1

TCPIP=1*

NetBIOS=0*

[Internet]

Server=1

Client=0

Display=* (password for Internet Access; the default password is disppword)

RunFTP=1

LogFile=C:\IDC_Log.txt*

UpdateTime=1*

Refresh=1*

[DNS]

Primary=*ip address entered during setup*

Standby=

IOServer=*ip address of Internet Server**

Alarm=*ip address of Internet Server **

Trend=*ip address of Internet Server **

Report=*ip address of Internet Server **

[GENERAL]

MSCryptSlowStartupFix=1*

